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ANCIENT CULTURES
OF THE
ASIATIC ESKIMOS

THE UELEN CEMETERY

By
Sergei A. Arutiunov and Dorian A. Sergeev

Translated and Edited by
Richard L. Bland

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SHARED BERINGIAN HERITAGE PROGRAM

Twelve to fifteen thousand years ago, Asia and North America were once joined by a massive "land bridge" in a region now popularly called "Beringia." In order to promote the conservation of the unique natural history and cultural heritage of this region, the presidents of the United States and the Soviet Union (now Russia) endorsed in 1990 a proposal to establish of an international park in the Bering Strait area. The Shared Beringian Heritage Program of the National Park Service, established in 1991, thus recognizes and celebrates the contemporary and historic exchange of biological resources and cultural heritage in this region. The program seeks local resident and international participation in the preservation and understanding of natural resources and protected lands, and works to sustain the cultural vitality of Native peoples in the region. To these ends, the Beringia Program promotes the free communication and active cooperation between the people and governments of the United States and Russia with regard to Central Beringia.

ПРОГРАММА «ОБЪЕДИНЕННОЕ НАСЛЕДИЕ БЕРИНГИИ»

12 – 15 тысяч лет назад Азия и Северная Америка были связаны «сухопутным мостом» в районе, который теперь называют Берингия. В 1990 г. Президенты Советского Союза (ныне Россия) и Соединенных Штатов подписали соглашение о намерении создать международный парк в районе Берингова пролива с целью сохранения уникальной истории, природы и культурного наследия этого района. Программа «Объединенное наследие Берингии» Службы национальных парков США, организованная в 1991 г. отмечает и признает современный обмен биологическими ресурсами и культурным наследием этого региона. Цель программы – вовлечь местных жителей и международных участников в дело сохранения природных ресурсов и охраняемых территорий, а также в работу по поддержанию жизнеспособности культуры коренных народов этого района. Помимо этого, названная программа содействует свободному общению и активному сотрудничеству между народами и правительствами России и США по вопросам, касающимся Берингии.

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TRANSLATOR'S INTRODUCTION

This work was originally published by Sergey A. Arutiunov and Dorian A. Sergeev in 1969 as *Drevnie kul'tury aziatskikh eskimosov (Uelenskii mogilnyk)* (Moscow: Nauka). Several works cited by Arutiunov and Sergeev in this book are available in English. Where the authors quote English versions I have drawn the quotations from the English version.

The format of the book has been kept as much as possible like the original, that is, illustrations, plates, etc., have the same numbers in the translation as in the Russian version. This is done to facilitate comparison with the original.

The excavation grids were laid out at the Uelen site in the standard way, that is, alphabetically in one direction and numerically in the other. Since the Cyrillic alphabet has more letters than the Roman, I had to add letters. Please find the correspondences after the Abbreviations at the end of the Reference section. For those who read *Problems of Ethnic History in the Bering Sea: The Ekven Cemetery* (a sequel of sorts to the present book) by Arutiunov and Sergeev, be alerted that the alphabetical correspondences differ slightly between the two books.

By modern standards the excavation of cemeteries (without just cause) is not considered appropriate. These works dealing with the Uelen and Ekven cemeteries are not held up as a model for archaeological practices. However, the work was done and an enormous amount of valuable information on the early inhabitants of the Bering Strait region was recovered. To ignore these publications because the archaeological work doesn't meet modern conventions is to no one's benefit.

Some of the sections of this book (Chapters 3 and 4 and Paleopathological Changes) were submitted by Professor Arutiunov already translated into English. Professor Arutiunov has also kindly written an epilogue to this work, which the reader will not want to miss.

I would like to thank Anna Gokhman for proofreading the text, Jackie Doyle for editing, and Sue Roberts for doing the layout. I would also like to thank Julia Knowles for proofreading the final copy. My special thanks go to Katerina Wessels of the Shared Beringian Heritage Program for the enormous amount of effort she puts into getting everything arranged, and Peter Richter and Robert Greenwood, also of the Shared Beringian Heritage Program, who made this project possible. Finally, we all owe the deepest gratitude to Academician Sergei Arutiunov for giving his permission to publish this landmark book in English.

Richard L. Bland

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PROLOGUE 2006

For decades, generations of researchers have written hundreds of monographs devoted to the study of the origin of Eskimo culture. The number of publications grows each year because even now the Eskimos' past varies in the imagination of different scholars.

It's impossible to resolve the question of Eskimo problem using only the data from archaeology or physical anthropology. Data from ethnography, language, folklore and toponymy must also be considered. Only through interdisciplinary research with parallels drawn from the known cultures of other peoples will properly address the Eskimo issue.

Publication of the monograph *Ancient Culture of the Bering Sea and the Eskimo Problem* by S. I. Rudenko (1947) was a very important event in the study of Eskimo culture. This work, for the most part, was not based on the results of planned excavations, but on the surface material, which of course put some limitations on the researcher's work. Despite this, a number of generalizations made by S. I. Rudenko, with the aid of comparative data, have retained their significance even today.

The monograph *Ancient Cultures of the Asian Eskimo* by S. A. Arutiunov and D. A. Sergeev (1969) was also devoted to the study of Eskimo culture. Many years of excavation at the Uelen cemetery served as the basis for this work. Archaeological and ethnographic research in Uelen and other places on the Chukotka coast of the Bering Sea and Strait allowed the authors to trace more closely the development of Eskimo culture during the previous two millennia. Besides information from the excavations at the Uelen cemetery, useful material was also obtained from the Ekven cemetery, which was much larger and located further south along the sea coast.

Archaeological, ethnographic, and physical anthropological research was carried out in the Bering Strait area by teams led initially (beginning in 1957) by Professor M. G. Levin, and after his untimely death in 1963, by S. A. Arutiunov, V. P. Alexeev, and D. A. Sergeev. The archaeological teams assigned to the work between 1965 and 1975 usually included 5–15 scientific personnel, plus several assistants hired locally from among the native population.

In 1976, D. A. Sergeev had serious health problems, so work in the Uelen-Ekven area was temporarily stopped.

From 1976 to 1977, M. A. Chlenov, I. I. Krupnik, S. A. Arutiunov, and L. A. Abrahamian were occupied with the exploration of a newly discovered site on Yttygran Island. This site was named "Whale Alley" and the results of this study were subsequently published in a monograph under the same title.

In 1987, Arutiunov led his last expedition to the Uelen-Ekven area and then passed the torch to his students M. M. Bronstein and K. A. Dneprovsky. Under their leadership and with international participation, the exploration was resumed and still continues today, with the shift of emphasis from the excavation of cemeteries to the excavation of dwelling sites.

The materials from the Uelen and Ekven cemeteries greatly enhanced our ideas about the life style of the ancient Eskimos, who lived at the beginning of the Christian era during periods characterized by the Old Bering Sea and Okvik cultures, and later by Birnirk and Punuk. First we should emphasize the high degree of stability and continuity of all known Eskimo cultures in the region of the Bering Sea. There was change in styles of ornamentation and forms of artistic expression, and the shape of the harpoon heads would vary during different periods, though a number of the basic types were known to a certain degree throughout all these periods. However, the main features of life remained unchanged, and sea mammal hunting remained the basis for existence, especially walrus hunting. Some variations did occur during certain periods, such as Birnirk when the preference was for small pinnipeds. On the other hand, the importance of whale hunting slowly but steadily emerged in this region, even though whale hunting was already known at the earliest stage of the Old Bering Sea period.

The hunting of land animals was always important, too. The forms of the associated hunting objects (bows, arrows, adzes, and ulu knives) are notable for their exceptional stability, testifying that this cultural complex had developed its basic features long before the Old Bering Sea stage of its development.

The high degree of continuity in Eskimo culture is reflected not only in tools and household items, but also in such more readily changing areas as folklore, art, and mythology.

A number of carvings amidst the excavated material show that many basic religious-mythological ideas and folklore themes, which are characteristic of the modern Eskimo, were well known and widespread as early as the beginning of the Christian era.

The high degree of stability of Eskimo culture during the period with which we are familiar does not mean that detailed and precise dating is not important. In that respect, the excavations in eastern Chukotka provide new and important data. The main point is that the new material disproves the theory that the so-called Uelen-Okvik stage is the oldest of all the known cultures (according to S. I. Rudenko). Okvik harpoon head forms were known throughout the area where Old Bering Sea forms existed. Both forms were similar and coexisted to a great degree. These forms did not follow one another in time, but were more likely territorial variants of the same culture. Wherever one might place the center of their genesis and the center of their occupation, the areas overlapped significantly throughout the territory examined. Moreover, there is reason to believe that Old Bering Sea harpoon head forms appeared earlier than the rest, while Okvik forms came into existence as a distinct style somewhat later and can be synchronized primarily with the developed and even late Old Bering Sea period.

As far as the Uelen component of the artificially created combination “Uelen-Okvik” type of harpoon head is concerned, this component is represented only by material found in the Uelen settlement by S. I. Rudenko and resembles the Okvik forms only superficially without exhibiting any genetic connection.

New ethnographic data (e.g., local legends) has allowed us to study this settlement more thoroughly. The data lead us to the assumption that it wasn’t until several centuries after the people stopped using the Uelen cemetery that the Uelen settlement began to be inhabited. The cemetery definitely was not in use after the late Punuk period, i.e., after the thirteenth or fourteenth century A.D., from the beginning of the so-called Little Ice Age, while the settlement should most probably be dated no earlier than the sixteenth or seventeenth century. It was probably not just Eskimos who lived in the Uelen settlement, but also some Chukchi who, by the time they came to Uelen, had already mastered sea mammal hunting. This could explain the seemingly archaic and primitive nature of the material from the Uelen settlement.

The graves in Uelen and Ekven cemeteries belonged, for the most part, to the mixed late Old Bering Sea/Okvik type which basically dates back to the fourth to seventh centuries.

Further development of the later types of harpoon heads of the early Eskimo culture of sea mammal hunters proceeded on this synthetic basis. In the seventh and eighth centuries, Birnirk types were developed that are associated predominantly with hunting small pinnipeds; in the eighth and ninth centuries, Punuk types appeared that were characterized by the development of a distinct, highly specialized kind of whale hunting. Although we can observe that the Birnirk types of harpoon heads are somewhat closer to the Okvik prototypes, and that the Punuk ones bear some features inherited from the Old Bering Sea period, all of them are generally rooted in a common complex formation.

The ninth and tenth centuries are the Birnirk-Punuk period when both types existed but their geographic distribution varied. Birnirk harpoon heads tended to be found mainly near the Arctic Ocean while Punuk types were found closer to the Pacific. In the region of the Bering Strait the distributions overlapped. Further evolution of these cultures led to the emergence of the so-called prehistoric and later Eskimo cultures.

Excavations at the Uelen and Ekven cemeteries gave us a mass of material in the form of hundreds of harpoon heads which, unlike most finds in the regions of the St. Lawrence Island and mainland Alaska, were not isolated finds but rather groups of objects found in grave complexes. This material allowed us to employ a formalized statistical analysis. As a result, the harpoon heads were grouped into a number of basic typological classes. The sequence of stages of development was established by building an evolutionary chain. A number of important inferences were obtained through statistical analysis of the distribution of harpoon-head types from the graves in the cemeteries, and in their compatibility within an individual grave.

The toggling harpoon heads, which are characteristic of all evolutionary stages of the Old Bering Sea culture, can be subdivided into four major groups.

Group I consists of the typical Old Bering Sea harpoon head with two holes for the line, an open socket, lateral insets, and a symmetrical spur. These harpoon heads are believed to have originated in spearheads that had a bone or antler body and insertable microblades.

Group II consists of harpoon heads with only one hole for the line and a closed socket. These heads were well known during all the developmental stages but became a dominant form only during the Punuk period. Unlike Group I, they were usually equipped not with lateral insets but with end blades made of polished slate, which are almost indistinguishable from the end blades of darts or javelins and must have originated from them.

Group III consists of harpoon heads with only one hole for the line, an open socket, and an asymmetrical spur. In evolutionary terms, this group is a transitional stage between Groups I and II, although chronologically the group existed during all the periods.

Group IV consists of harpoon heads with prongs, a characteristic of the Birnirk period. Genetically, they are a synthesis of the Group I tradition and the pronged non-toggling harpoons and fish spears.

According to accumulated ethnographic data, different forms of the harpoon were used depending on the ecological situation of a given time or region.

In general, toggling harpoons were used in places where there was a possibility of hunting from boats when the sea was covered with ice floes. In areas where for most of the year there were no ice floes, but rather solid ice fields, and hunting could be done near air-holes, hunters usually used either non-toggling harpoons or so-called semi-toggling harpoons of the Birnirk type.

Smaller details of harpoon head construction also reflect ecological nuances. Thus, the statistical compatibility of variants X and Y within one type (Collins 1937) is connected with climatic differences, as well as with the severity of the ice regime. Other variants reflect societal diversity. For example, harpoon heads in Group II could have either one or three spurs. The distribution of these variants over different parts of the cemeteries, where they practically never overlap, led us to the conclusion that these differences reflect some social groupings or subdivisions (different subtribes, or clans, or moieties, etc.) among the inhabitants of the ancient villages.

An iron blade found in an Old Bering Sea grave (the spectral analysis indicated that the iron was man-made and not meteoritic), along with many stone and bone tools made by imitating metal tools, not only lead us to reconsider the time of the introduction of iron into the Arctic region, but also reveal the major trends of the cultural links in the Bering Sea region during the first centuries A.D. The trend of these links appears to have stretched more intensively to the south and southwest, that is, to the regions of the Amur River and the Sea of Japan.

The excavations at Ekven cemetery provided us with much new paleoanthropological material which, when combined with the numerous older findings, allowed us to make some inferences concerning the configuration of the peoples of the Arctic. All in all, the paleoanthropological material from the

Uelen and Ekven cemeteries generally seems to prove the hypothesis of V. P. Alekseev, which was stated in his article on the craniology of the Asian Eskimo. The people from the cemeteries in Uelen and Ekven had much longer heads than contemporary Eskimos of the same region, although their heads were smaller than the heads of Greenlandic Eskimos. Thus, neither the Bering Sea variant of the Eskimo complex, as A. Hrdlička (1930) and G. F. Debets (1951) thought, nor the Greenlandic one, as M. G. Levin (1947, 1958) expected, were the original versions for the formation of the anthropological peculiarities of the modern Eskimo.

The original variant was some neutral intermediate complex which was typical for the population living many centuries ago in Ekven and Uelen. On the basis of that complex we have the modern Bering Sea craniological variant to the west of the Eskimo range as a result of brachicephalization and the Greenlandic variant to the east as a result of specialized adaptation. Probably the processes of adaptation and brachicephalization worked simultaneously in different areas of the modern Eskimo range.

Recent physical anthropological studies prove that the Arctic peoples belong to the Pacific branch of Mongoloids and are closer to the eastern and southern than to the mainland Mongoloids. The Arctic peoples include the Eskimos, Aleuts, and Chukchi. The results of most recent research demonstrate a genetic unity between the Eskimos and Chukchi and completely reject the hypothesis of an Eskimo wedge. Therefore, we think that the differentiation between these continental types—the reindeer herding life style that is characteristic of the Chukchi and the sea mammal hunting style that is characteristic of the Eskimo—occurred in a genetically homogeneous environment.

So far there is no ultimate conclusion as to where the differentiation began or how the Chukchi Peninsula was explored by the Chukchi and Eskimos.

But we can arrive at some suppositions that can be stated as working hypotheses. These hypotheses are grounded in a systematic fifteen-year-long study in the archaeology, ethnography, language, and folklore of the western Bering Sea Eskimos and based on numerous publications on archaeological, anthropological, and ethnographic studies done in Alaska, Canada, and Greenland. These working hypotheses are: the genesis of Eskimo culture is connected with specialized sea mammal hunting; the final formation of the basic features of Eskimo culture took place in the Bering Sea and Bering Strait area, from where the spread of Eskimo tribes proceeded to all the territories of their latest distribution; and the development of the main features of Old Bering Sea and related cultures ultimately occurred in the Bering Sea region.

Originally the Eskimo-Aleut tribes probably occupied more southerly territories, perhaps along the Okhotsk Sea coast, possibly down to the region of the Shantar Islands. Later, they moved farther north along the coast of Gizhiga and Penzhina. From there the ancestors of the Eskimos and Aleuts moved to the coast of the Bering Sea after crossing the narrow portion of the Kamchatka Peninsula.

We should also note that even now a number of geographic place names in northern Kamchatka are of Eskimo-Aleut origin despite the fact that these people no longer live there.

According to the results of archaeological excavations, the Kamchatka Peninsula was populated long before Eskimo-Aleut tribes came. Some of the newcomers possibly assimilated the earlier population and might have formed the tribes who later developed into the Okhotsk culture, but the majority of the Eskimo-Aleut tribes went farther north. After having inhabited the Asian side of the Bering Sea coast and Bering Strait region, the Eskimos crossed the strait in the region of the St. Lawrence Island in the south and along the Diomede Islands in the north. As far as the differences between the Eskimos and Aleuts are concerned, one of the groups may not have gone north, but rather (as Krasheninnikov thought) either crossed via the Commander Islands or went along the southwest coast of Alaska to settle the Aleutian Islands. Some people were undoubtedly already there who were probably related to American Indians from the east.

Paleo-Aleut stone articles are more comparable to Neolithic ones from the pre-Eskimo cultures of Alaska than to ancient Eskimo artifacts.

A further study of the Aleut language may reveal that the development of the Aleut vocabulary could be associated, to some extent, with borrowed Indian words. The borrowing should be more obvious among the peoples of the Aleutian Islands that are close to mainland Alaska. Some borrowing is clearly observed in the art and material culture.

Of the Eskimo-Aleut tribes that moved north, no evidence has been discovered that indicates they met other ethnic groups in the region of Chukchi Peninsula. And no wonder, since we believe that the spread of the Eskimos along the coast of the Bering Sea began no earlier than the first half of the second millennium B.C., i.e., no earlier than 4,000 years ago.

Long before this, Paleo-Indian tribes came through the Beringian isthmus. The Bering Strait formed later and climatic changes forced changes in the means of subsistence. Few wild reindeer existed on the relatively narrow piece of land at the eastern end of the Chukchi Peninsula—a sound argument that continental reindeer hunters would not have gone so far to the northeast. Even now, in the twentieth century, the number of deer that can be pastured in that region of Chukotka is extremely limited.

At that time the techniques for hunting reindeer were still poor, which was the reason why Neolithic tribes could not exist in eastern Chukotka. Later, after the Chukchi tribes came to Chukotka and reindeer herding appeared, the people in the northernmost regions of the peninsula had to hunt tundra animals and fish, and seasonally hunt sea mammals since reindeer herding alone in this poor habitat could not provide subsistence.

We believe that the northeast-most boundary of the reindeer hunters in the second millennium A.D. was the territory from the Amguema River in the north to Cross Bay in the south.

The Chukchi must have come to the western Bering Sea in the first millennium A.D., and their contacts with the Eskimos were limited. Later, after the appearance of large-scale Koryak and Chukchi reindeer herding, the Chukchi explored deer pastures near the coast that were populated by Eskimos. Wars, which are described in the folklore of both peoples, occurred during this period. We believe that the era of gradually increasing contacts between Chukchi and Eskimo was during the twelfth to sixteenth centuries. Due to the lack of pastures and simultaneous population growth in the sixteenth and seventeenth centuries, the Chukchi could no longer sustain themselves with deer herding only. Some groups, therefore, shifted to sea mammal hunting, borrowing the techniques from the Eskimos.

After the Chukchi moved to the coast, some of the Eskimo villages became mixed Eskimo-Chukchi ones. Uelen, originally a purely Eskimo village that was in existence long before the Christian era, eventually became a Chukchi village. V. G. Bogoras (1904) observed the same, noting that the Eskimos were gradually assimilated by the Chukchi. As support, he compared the names of a number of Eskimo villages on the coasts of the Arctic and Pacific Oceans. By the end of the nineteenth century those villages were occupied by Chukchi.

These long-term contacts between the Eskimos and Chukchi could not help but influence incoming people. Such connections existed only in the areas where the two ethnic groups had contact. So how can we explain the fact that the inland Chukchi, who had no contact with the Eskimos, belong in the same category as the other Arctic peoples? The contact dates back to the time when the Eskimos were still in the southern regions of the Okhotsk coast, which was bordered on the south by the Amur River region. Ancient Koryak and Chukchi tribes came from the more continental regions and were not connected with the coast. The inland contacts possibly allowed borrowing of material culture (the beginning of reindeer herding) as well as of spiritual culture (religious and shamanistic beliefs).

Koryak and Chukchi groups moved north in the middle of the first millennium B.C. and, unlike the Eskimos who moved along the coast in boats, their movement was slow. The Koryak tribes arrived at their present area of distribution slightly later than the Chukchi and therefore had more contact with the continental Siberian peoples. This possibly explains why the Koryak had reindeer herding earlier than the Chukchi. Chukchi reindeer herding was borrowed from Koryak tribes.

The Chukchi who came to the coast did not alter the culture of the sea mammal hunting Eskimos, but they brought some elements of the Siberian continental cultures, which can be seen in spiritual manifestations. Besides direct influence on the spiritual culture of the Eskimos, we can see other, possibly even more important, indirect influences.

The transition from late Old Bering Sea to the early Punuk period lasted for several centuries (seventh to ninth). The process had a number of features that indicate an increase in intertribal warfare. During this period, for example, more massive arrowheads and plate armor appeared, which were used not only for hunting but also for war.

The growth of the coastal Eskimo villages was not only related to the economy but also to warfare. Larger villages were stronger in a battle. Here we can cite two tendencies that are not genetically connected but their directions coincide, and so stimulate each other. A tendency toward developing whale hunting stimulated the growth of working groups. Also, a tendency toward coming together in large villages for protection occurred due to the warfare. Both of these stimulated the development of whale hunting because there were more people to be fed. More people living in a village meant more boats going out to sea, which meant a greater chance for a successful hunt. The combination of all these factors made the villages grow quickly, which eventually brought changes in the spiritual culture. More possibilities for large feasts and competitions existed in a large village, and more people would attend. As the demand for these things increased, festivals and rituals could be borrowed from other cultures. Several centuries of proximity and a mutual cultural influence made the genetic homogeneity of the Chukchi and Eskimos even greater. However, this homogeneity cannot be explained just by later contacts, but must be considered as a result of contacts of all the peoples belonging originally, still on the territories of their ancestral formation, to the same cohort of people now called the peoples of the Arctic.

The data we have now allows us to outline an ideology of the toggling harpoon, in recognition that it is the basis of the maritime hunting economy of the ancient Eskimos living along the coast of the Bering Sea. The Eskimos lived in the very complicated ice conditions of the Chukchi Sea and Bering Strait. It is not an overstatement that the harpoon was the industrial basis of the whole economy of the Eskimos, of their culture and fundamental activities. That sheds light on the thoroughness with which the ancient masters processed the heads of their harpoons, why they experimented so much with them, and why they covered them with such fine decoration. It is difficult to decipher this decoration. In most cases it is geometric. Possibly, besides the magic aspect, this decoration could have been a way of checking whether the ready-made harpoon was proportionately adequate to the generally accepted pattern. A symmetrical and well-balanced decoration simply would not fit on a disproportionately made harpoon head. So it is no accident that, as a rule, the experimental, unusually shaped heads were not decorated. Besides the abstract compositions and symbols, we can sometimes see vaguely zoomorphic, and at times, more realistic zoomorphic motifs in the ornamentation. Unquestionably, all kinds of symmetrically placed circles and circles with dots may be defined as eyes, whereas the harpoon head itself with a slot in front for the spearhead-like end blade may be perceived as the snout of an animal. The prongs of basal spurs in the asymmetrical harpoon heads often resemble a sea mammal's flipper, whereas symmetrical harpoon heads, that is, harpoon heads with an open socket and a symmetrical basal spur, very often resemble the hind part of a pinniped—a seal with hind flippers and short pointed tail. But the socket piece (the head or front part of the harpoon shaft) has a significantly more zoomorphic look to it.

A foreshaft is a small part of the harpoon, and it was rarely decorated. Actually, there was no place on it for a complicated design. While we sometimes do come across decorated foreshafts, it is the exception.

Except during the very late periods in Eskimo history, the head part of the harpoon shaft, i.e., the socket piece, was unfailingly ornamented. In this case, the ornament is always vividly zoomorphic, and though it is highly stylized and abstract, it is quite easy to read. The Uelen burial site contained a head of a harpoon shaft, i.e., a socket piece which, if we can say so, makes it possible for us to "read" the rest of the socket pieces (cf. Fig. 43:4). The front part of this socket piece is a very realistic-looking head of a polar bear—with eyes, ears, a well-profiled snout, and, most important, clearly defined fangs—large ones—in between which there is an opening for the foreshaft pin. Clearly, this harpoon, with all its parts made in this way, was supposed to represent a polar bear. This is logical enough, as the hunter himself became a predatory animal—he pursued pinnipeds, and when he thrust the harpoon or when the harpoon hit the animal, the entity of a predatory bear separated from the entity of the hunter, and the harpoon itself became a kind of animated semblance of a predatory animal, an animated semblance of a bear that could bite and grab the animal it pursued. We can easily see a bear's snout in other heads of the shafts. But in most of the other cases it is much more stylized, though the large triangular fangs on the side of the head are always there, even if the other parts of the head are given only as a hint. Finally, there are roughly made heads that have little decoration on them. If there were no fangs in this decoration, the zoomorphic factor could not be read at all, but the fangs, even if they are only roughly outlined, simply serve as some kind of hieroglyph—two triangles, one opposite the other. And it is clearly understood that although the shaft head is roughly made, it is still a bear's head. In point of fact, these two triangles (depicting the fangs) became a sign, a hieroglyph that transmitted the concept "bear." Instead of depicting the head of a bear on the top end of the shaft, it is sufficient to depict this hieroglyph, these two fangs, and in this way, when we look at the top end we "read": bear.

But if the top end of the shaft is the head of a bear, this means that we have to look for the rest of the bear's body. Surprisingly, that is something that is not found. Farther along comes a wooden shaft, either long or short. If the shaft has a winged item on the other, basal end, then it is quite short, but if the item is an ice pick and not winged, then it is much longer. But in either case, we do not find any signs of a body on it. It seems to me that the Eskimo hunter identified the harpoon shaft with the stretched-out neck of an animal, not with the body of a bear. Incidentally, one can see sculpted bears with normal necks, but more often than not, the neck is unnaturally long. It must be mentioned here that in Eskimo oral folklore there are signs that characterize the neck of the magical bear, the werewolf bear, as being long. It is this bear that has supernatural qualities compared to the other bears, and its neck is very long.

Now we shall proceed with analysis of the so-called "winged objects." In this monograph D. A. Sergeev, who wrote a special chapter devoted to these objects, reconstructed their function as that of locks that fastened together the main stringers in the bow of a kayak.

However, later *in situ* finds demonstrated that this reconstruction was erroneous, and that the more likely explanation was the idea initially proposed by Henry Collins that the "winged object" was fastened to the rear part of a short harpoon shaft as a counterweight or a stabilizer.

As far as the function of "winged objects" is concerned, i.e., when we find them at the other end of a shaft where they serve as a counterweight or counter-balance, they are also a stabilizer since they possess certain aerodynamic qualities that stabilize the thrown harpoon. They used to be compared to a butterfly, and there have even been attempts to explain them as the image of a butterfly. But now we know that these are not butterflies at all. The wings of these items often have images of stylized snouts of various creatures on them. It is not always clear what they are. They could be bears or predatory walruses or something of the kind. Quite often the central part has some multi-figured polyiconic composition, or simply a mask, or an animal's snout, or a deformed human face, or some complicated composition that has both anthropomorphic and zoomorphic features all in one. On the whole, the "winged object" resembles to a certain extent the *t'ao-t'ieh* motif made of ancient Chinese bronze (*t'ao-t'ieh* is a monster). We do not know what it actually means in folklore. Its meaning did not reach us, but it is symbolic that those two very complicated hieroglyphs that denote it are not present in other Chinese texts, and both have a "key" in the lower part—a determinative "to eat," "to devour." Thus, *t'ao-t'ieh* is, in any case, a devouring creature. If the whole harpoon is a bear—a predatory animal that bites—then it is quite possible that its charmed magical soul, which gives it supernatural qualities, is a kind of monster or a spirit that takes on itself a "devouring" function.

The "winged object" did not resemble a butterfly initially. It is the later specimens that most resemble a butterfly—those that belong to the epoch that was a transition to Punuk, where one can clearly see in "winged objects" the further stage when the object would lose its wings and become the so-called Punuk trident. And even further on, this would not even be a trident but simply a more or less rectangular artifact, a nozzle on the other end of the harpoon, that would retain a groove for the tooth of the spear thrower (atlatl), which makes it possible for us identify the purpose and place of all these objects—the "winged objects" proper, the tridents, and the rectangular and cylindrical heads of later Punuk.

The basal sockets of the other end of the harpoon shaft have a variety of shapes, but the function they performed is the same: that of holding the shaft in place on the throwing board (atlatl) while the harpoon is being thrown into the air with the aid of the hook on the projectile. When that happens, the harpoon starts to have a life of its own as an animated predatory animal that kills the prey: seals, walruses, or whales. We can state with certainty that the soul of the harpoon is concentrated in the head, which starts its own life reflecting that of a predatory animal. There are a great variety of shapes. In analyzing the more archaic ones, the earliest would belong to the early Okwik period. Here, we see that they are very simple, and unornamented or, if so, to a very small degree. However, their shape resembles an anatomical part—that of a cervical vertebra. Not just any one, because there are seven of them in the spinal column. They resemble the main one, the one that holds the head in place, and because of this is called the atlas in anatomy. But what is an atlas vertebra from the point of view of the magical or spiritual concept of the animal's body, and man's too? Both man and animal (according to the Eskimo world view, there is no real difference between them, and they can easily change one into the other) have one and the same structure, a structure with which the Eskimos, who knew the anatomy of mammals, were very well acquainted. The major parts of any anatomical structure are the joints, and when the carcass is cut into pieces, special attention is paid to the bones, which must not be damaged. Therefore, the carcass must be cut through the joints. A carcass is considered well cut when the joints are cut through in the right places.

Both man and animal have several souls and, as the Eskimos believe, these souls are in several places, in the joints to be exact. But the main, the dominating, soul of any living creature is in the atlas vertebra. Quite a few zoomorphic sculptures have the animals with a spine marked by a special sign. In Greenlandic sculpture, in East Greenland more specifically, we may find cross-like incisions. In Bering Strait Eskimo traditions we can see images of whales (made of bone), where small beads indicate the eyes and a large one indicates the spot just behind the skull. Of course, the whale has no neck, but it does have a joint that holds together the skull and the neck, and it is this joint that is perceived as the soul of the whale. There is also a practical side to this perception—when a walrus or large seal is shot at or harpooned, it is the neck that is aimed at, right behind the skull. This wound is considered to be the most effective, as the animal won't be able to dive as easily as it usually does; it will lose its strength and will have to remain on the surface of the water, thus becoming a much easier target for new javelin or harpoon thrusts. It is this neck joint that receives the first wound. At the same time it is not lethal, but it must not be, because a lethally wounded animal sinks to the bottom at once, and in this way becomes lost to the hunter. To strike at the main soul of the body, while the other souls are still alive in it—that is what striking at the neck of the animal means.

Consequently, we can conclude that the "winged object," like the basal sockets of later periods, bore great magical significance. It was the place of the soul in the harpoon that struck the animal. It should be noted that the contemporary language of the Bering Strait Eskimos has a word that signifies this "winged object." They are well acquainted with this type of object, though actually these objects have not been made for over a thousand years. However, if the Eskimos happen to find an ancient object, they value it highly as an amulet. Dorian Sergeev wrote about this, but, though he based his conclusions on the conceptions of contemporary Eskimos, he was wrong in considering this "winged object" to be an item that pulled together the stringers of a canoe or a kayak. There have been numerous hypotheses concerning the purpose of this "winged object." Nikolai Dikov and other authors mention quite a lot of them. But later finds of these items *in situ* have clearly enough shown that the initial view voiced by Henry Collins was the correct one. He said that, most probably, the "winged object" was an element that was put on the tail end of the harpoon shaft, on its basal part. Because the "winged object" is the soul of the flying harpoon, it becomes clear why it became tradition to depict on these objects both predatory animals and the fantastic semi-anthropomorphic/semi-zoomorphic animals that served as souls to help the hunter. But what word do the contemporary Eskimos of Bering Strait use to denote this "winged object"? Sergeev gives us a number of words. One of them is *nanektek,* which is connected with the word *nanek*, denoting both the front of a canoe and an oil lamp. One meaning does not exclude the other, because when the Eskimos sailed long distances the oil lamp could be placed in the front of the canoe, just as they now put a primus stove there for making tea during a long voyage. A round oil lamp on a canoe might not have been so vitally significant, but the connection between the words is obvious. However, another word is more interesting and productive for us, one that denotes a "winged object" and has traditionally been retained in the language of the Bering Strait Eskimos. This word is *uyakug(h)mitok,* from *uyakug* meaning "neck." It can be literally translated as "holding the neck in place" or "keeping the neck together," which is actually quite logical when the first cervical vertebra—the atlas—is denoted. Clearly, then, no matter what decoration is on the "winged object" or on the head of the harpoon shaft or on the head of the harpoon, or even if there is no decoration at all, this part of the harpoon has some coded ideological information in it—the concept of the harpoon as a predatory animal in itself that strikes the prey.

These are a few remarks that should probably be added to the English translation of the current monograph to update it.

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INTRODUCTION

The work presented here is the first book in a series of works that will be dedicated to the history of the culture of the Asiatic Eskimos and their closest neighbors, who long ago settled the extreme northeast of our country.

The problems of the ethnic history of the Eskimos, the genesis of their culture, and their historical connections with other peoples of the world have long attracted and continue to attract scholars' attention.

The historiography of these problems has been outlined in several works and, in particular, in the first chapter of this book.

The Eskimos live in the most severe northern regions of the Old and New Worlds, with their numbers exceeding 70,000. They occupy a huge area, and many of the people live outside Russia. In Alaska, there are about 24,000 Eskimos, in Canada about 13,000, and in Greenland more than 33,000.

The Eskimos on the Asian continent are concentrated in several villages on the Bering Sea coast and the Bering Strait, where there are 1,200 individuals. These people live in the mountain ranges and on the tundra and vast plains where roaring rivers empty into the Arctic and Pacific Oceans. Here the Arctic and Subarctic climates are severe, with permafrost only one meter down. Here the short, and cool summer lasts only two to two and a half months, while winter, with its heavy snowstorms and hurricane-like winds, spans up to eight months. In much of the territory of Chukotka, the polar day reigns in summer, while in winter all is sunk in the darkness of the polar night.

The Eskimos of the Chukchi National District—aborigines of this severe region—are in the easternmost part of the Soviet Union.

Until the Revolution, the local residents were occupied only with reindeer herding and hunting. Modern Chukotka is an industrial region with many ports, airfields, and highways. This is a region of developed deer herding, sea-mammal hunting, and fur trading, a region, where the transmission of electricity stretches to mines, quarries, and industrial enterprises.

At the end of the glacial period in the region of the Chukchi Sea and the northern part of the Bering Sea, there was dry land—the isthmus of Beringia—along which, as along a narrow bridge, people migrated from Asia to America 30,000 to 40,000 years ago. As if to recall the fact that dry land once existed here, the rocky islands of Ratmanov and Kruzenshtern [Big Diomede and Little Diomede, respectively] in the Bering Strait remain. Now the Bering Strait is the boundary between Asia and America, the narrowest part of the strait being about 90 kilometers wide. The American boundary passes between Ratmanov and Kruzenshtern Islands, which are located in the center of the strait. On one side is Chukotka, on the other Alaska.

At present, archaeological research on the islands in the Bering Sea and Bering Strait, and in Chukotka and Alaska has not produced any traces of the first people to migrate from Asia to America. It is possible that these traces, in the form of fire pits, stone and bone tools, and burial grounds, are at the bottom of the Bering Sea and Bering Strait.

But numerous sites on the Chukchi coast have been preserved—cemeteries and villages left by the ancestors of the modern Eskimos. Some of these sites have been studied. Others await discovery and study. This book is dedicated primarily to the first large site studied, the Uelen cemetery.

Immediately after D. A. Sergeev's discovery of the Uelen cemetery in 1955, Professor M. G. Levin estimated that the site would be very significant. The distinguished Soviet anthropologist saw in studies of this Old Eskimo site the possibility of substantially developing and enriching our knowledge of the history and character of early Eskimos' culture. Until the discovery of the Uelen cemetery, this knowledge was based chiefly on materials collected by foreign researchers on the Arctic coast of North America, while scholars knew nothing about the physical type of the early population of the Asiatic coast. Craniological research has shown that the population that buried its dead in this cemetery was close in physical type to modern Eskimos.

Professor Levin directed the Chukotka Division of the Northern Expedition (at the Soviet Academy of Sciences) and, over the course of three field seasons, personally took part in the work in Chukotka. His initiative, organizational talent, and scientific acuity guaranteed success in further work by the Chukotka Division.

The materials of the Uelen cemetery belong chiefly to the first millennium A.D. The Chukotka Division later investigated several other sites, most of which were synchronic with the Uelen cemetery. Thus, investigations were carried out on the substantially larger Ekven cemetery, discovered by Sergeev in 1961 and located 40 kilometers south of the Uelen cemetery. The ruins of the early Ekven village were also studied, as were the ruins of an early dwelling at the Uelen site (in 1957), a survey of which was first conducted by S. I. Rudenko in 1945. There was additional work at some other sites as well.

The material acquired during the excavations was diverse and rich. Archaeological, historical-ethnographic, and art-study analyses of this material provide extensive resources to help answer important questions about the historical connections between the early population of the Bering Sea basin and the peoples of other regions of Asia and America.

A few brief reports about work at Old Eskimo sites have already been published (Arutiunov et al., 1963; Arutiunov and Sergeev, 1962; Levin, 1958a, 1960; Levin and Sergeev, 1960, 1964; D. A. Sergeev, 1959, 1965).

The variety, good preservation, and artistic wealth of the objects of material culture that came down to us from the early Eskimos was brought about largely by the fact that this people had an abundance of excellent, easily worked, and durable walrus tusk.

Besides ceramics and stone tools, almost all objects found were made of walrus tusk. An insignificant number of the items were of bone or antler.

It was not possible for the authors to give an exhaustively full characterization of the materials described in this work. For example, even if just the ornamental objects of the Uelen cemetery were selected, a detailed analysis of their varied forms, the development of these forms, their stylistic features, and their connections with the decoration used by other peoples would require a separate book, perhaps one larger than this.

In this book, the authors have tried above all to make the material accumulated during the course of fieldwork accessible to other researchers.

This work was organized as follows: S. A. Arutiunov and D. A. Sergeev wrote Chapters 3, 4, 6, 7, and 9 together. D. A. Sergeev wrote Chapters 1, 2, 5, and 8. S. A. Arutiunov compiled the plates of structural formulas of harpoon and arrow heads and material from the burials.

M. R. Semashkevich executed the drawings of the burials based on the authors' field sketches.

The artist Yu. S. Kuznetsov did the illustrations of the objects of the material culture.

Several drawings by the Eskimo artist Unuk from Naukan Village were also included in the book.

For the description of the material from the Uelen cemetery, the authors borrowed comparative material from other sources as needed, especially from the Ekven cemetery. In the archaeological part of the work, having concentrated all their attention on the characteristics of the materials of the Uelen cemetery, the authors examined material from the Ekven cemetery, which differs noticeably from the Uelen site, only when absolutely necessary. There was no essential difference between these two sites in the physical-anthropological description since the population that produced them was physical-anthropologically homogeneous, and, in some cases, the Ekven cemetery provided anthropologists with primary material.

The authors dedicate this book to the memory of Maksim Grigor'evich Levin, who died prematurely in 1963.

Chapter 1

Russian Historiography on the Eskimo Problem

The problem of the origin of the Eskimos and their culture is directly connected to the problem of the settlement of the Arctic. The Eskimos are the only people who settled the Arctic coast of Asia and America. The history of this people is the history of the greatest Arctic migration, during the course of which the Eskimos opened up not only Alaska but in time even reached the shores of Greenland.

Archaeologists have succeeded in discovering traces of early Eskimo campsites, villages, and cemeteries over a huge expanse: along the coast of the Chukchi Peninsula, on the shores of Alaska, in Canada, on the islands of the Canadian Archipelago, and on the coast of Greenland.

Asia is the homeland of the Eskimos. From there, along the shores of the Bering Sea, in the very distant past—before and at the beginning of our era—the Eskimos began to settle this huge territory that they now occupy. This was the last wave of migration of peoples from Asia into America.

Hundreds of books and articles in various languages are dedicated to the origin of the Eskimos and their culture—many more than are devoted to other more populous peoples. In a vast foreign literature, the most varied hypotheses and theories are posed as to the question of the Eskimos' aboriginal homeland and their culture. Researchers' opinions have diverged: some (Collins, Jenness, and Larsen and Rainey) place this aboriginal homeland in Asia; others proposed the theory of an American origin for the Eskimos (Boas, Steensby, and Birket-Smith).

A historical survey of these theories is elucidated both in foreign literature (Hrdlička 1930:329–366) and in Russian works (Rudenko 1972:7–19), and is especially fully treated in the works of the last decades in the monographs of M. G. Levin (1958b:212–218, 238–244) and L. A. Fainberg (1964:9–34).

It should be especially emphasized that the materials on which the theories of American and Danish scholars were based belong primarily to archaeological investigations of the polar regions of the Arctic coast of North America.

This is not surprising since the Chukchi Peninsula was little studied archaeologically until the discovery of the Uelen and Ekven cemeteries.

We will dwell on the contribution that Russian scholars have made in determining the Eskimo problem, since, historiographically, the works of Russian scholars in this sphere have not been elucidated.

Proud of our Russian research, we consider it necessary to note the remarkable fact that the question of the settlement of America by emigrants from Asia—one of the basic questions of the Eskimo problem—was first posed by Russian scholars 200 years ago.

The term "Eskimos," which appeared in the literature in 1611, was borrowed by missionaries living among the Indians of the Abenaki tribe: the name "Eskimantsik" ("eating raw food") was initially assigned only to Eskimos of the North American continent.

The Eskimos of Asia, from the moment Russian sources first reported on them in 1655[1] and through the nineteenth century, were not distinguished from the Coastal Chukchi and were known as "Chukhchi," "Toothed Chukchi," "Settled Chukchi," "Onkilony," and "Aivany."[2] It was not until 1901 that W. G. Bogoras established the precise delimitation between Eskimos and Chukchi.

The question of the naming of the Asiatic Eskimos was not completely settled until the end of the nineteenth and beginning of the twentieth centuries. But, as early as the middle of the eighteenth century, Russian scholars had already posed the question of where the Asiatic and American Eskimos came from as these scholars sought to answer other questions about the settlement of the American mainland. And in this question, Russian scholars' priorities are indisputable.

A member of the second Bering expedition, the naturalist G. W. Steller, who visited Kodiak Island on July 16, 1741, was the first to express the idea that the residents of the island (Steller 1793) had come from Asia. Later, this question, with partial reference to Steller's materials, was posed in a broader plan presented by a Russian scholar and traveler, the investigator of Kamchatka, S. P. Krasheninnikov, in 1755 in his work *A Description of the Land of Kamchatka*. Steller and Krasheninnikov hypothesized an Asiatic origin for the Eskimos of North America more than a quarter century before Cranz did.[3]

Krasheninnikov, in Chapter X of his book on America, wrote:

> Since there does not exist any certain and detailed account of that part of America which lies east of Kamchatka, we might have dispensed with describing it here and waited for the publication of the accounts of voyages to the coast of America. However, in order to follow our plan to give the reader some idea of all the lands near Kamchatka, we intend to make public certain materials taken from Steller's notes (Krasheninnikov 1972:67).[4]

Although Krasheninnikov had only insignificant, at times fragmentary, data from Steller's entries, the most interesting question of the geological structure of the northwestern extremity of the American mainland, identical in its nature to Northeast Asia, did not escape his attention. Krasheninnikov was the first in Russian literature to conclude that "it is not unreasonable to suppose that these two continents may formerly have been joined together, especially at Cape Chukotsk, since the distance between this cape and the tongues of land situated opposite it to the east is not more than two and one-half degrees" (Krasheninnikov 1972:67).

Krasheninnikov describes "the natives of the islands near Cape Chukotsk, who have contact with the Chukchi, are very likely the same ancestry as the American natives, since they also consider it ornamental to insert bones into their faces" (1972:70).

Further, speaking of the similarity between the peoples of Kamchatka and those of the American mainland, Krasheninnikov attempts to answer the question of where "the natives of America came from; for even supposing that the American continent had never been joined to Asia, these two parts of the world are so close that it cannot be denied that it is entirely possible that the natives of Asia crossed over to America to live there; and this is all the more likely, since in the short distance which separates these two continents, there are many islands which would have favored such a migration" (Krasheninnikov 1972:71).

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[1] In 1655 Semen Dezhnev reported to the Yakutian provincial governor about his voyage from the mouth of the Kolyma River around the Chukchi Peninsula: "And opposite this point there are two islands and on those islands live Chukhchi, and they have teeth inserted, cut through the lip, bone fish tooth. . . ." (*Dopolnenie k aktam* . . ., 1851:25).

[2] The terms "Aivany" and "Aikaleny" were borrowed from the Chukchi language; the Reindeer Chukchi called the Eskimos—chiefly the group of settlements at Cape Chaplina—"Aivanat" or "eastern," that is, those living under eastern wind (in relation to the Chukchi deer herders), as well as "Ankalit" or "coastal residents."

[3] In the West the theory of an Asiatic origin for the Eskimos was first formulated by D. Cranz (1770).

[4] G. W. Steller's entries in the German language were for a large circle of readers naturally entirely incomprehensible, and S. P. Krasheninnikov was the first to set forth in his work Steller's most interesting passages and statements.

A contemporary of M. V. Lomonosov, one of the greatest Russian scholars, Krasheninnikov was the first to express the idea that the American mainland had been joined to Asia in the region of the Chukchi Peninsula in the distant past; that the settlement of the American mainland proceeded from Asia; and that the Aleuts of the American islands are related to the Asiatic Eskimos.

These three suppositions, expressed by Krasheninnikov 200 years ago, not only have not lost their significance today but are of substantial importance in seeking to answer both the question of the Eskimo problem and the question of the initial settlement of the American continent.

Russian scholars turned the questions touched upon by Krasheninnikov as early as the end of the eighteenth century. In 1785, by edict of Katherine II, a large "geographic and astronomical expedition" was organized, the task of which was the description of the Chukchi coast from the Kolyma to the Bering Strait. Captain-Lieutenant Joseph Billings was named leader of the expedition. V. Yu. Vize wrote, "With regard to its basic tasks-investigations of the eastern part of the Arctic Ocean-the Billings Expedition, which lasted 8 years[5] and cost an enormous amount, did practically nothing" (1948:250). Even regarding the question that interests us, Billings did very little. F. W. Wrangel wrote:

> About the inhabitants of this wild land, Billings reports nothing to us in his notes except descriptions of some superstitious rites, and leaves us to regret that the exceptional difficulties endured by the travelers during the trip through all of Chukchi land did not acquaint us any better with its inhabitants (Wrangel 1948:86).

Correctly observing that "wandering Chukchi by their method of life and the dialect of their language are very similar to the deer-herding Koryak, and it is sufficient to think that they once consisted of one people," Billings later wrote:

> The sedentary differ from them both in outward appearance and disposition, and even more by their more invariable houses, by way of life and dissimilarity of language, which among them is entirely different and approaches closely to the dialect of the Kodiak islanders, which can be seen from the similarity of the following words selected from the dictionaries of both languages (Sarychev 1811:67).[6]

Captain-Lieutenant Billings further wrote:

> From this similarity of dialects of the residents of Kodiak Island and the "Settled Chukchi," it is possible to conclude with some reliability that they once consisted of a generation of one people, though at present a distance of one and a half thousand versts separates them, calculating from Kodiak to the north along the American coast to [the] Bering Strait; but perhaps all this expanse of coast is inhabited by residents homogeneous with the Kodiak islanders, and the "Settled Chukchi" belong to the same generation, but in time and circumstances they were required to separate from them and, crossing [the] Bering Strait, to settle on the shores of Chukotka land (Sarychev 1811:68).

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[5] The expedition left Petersburg in 1785 and returned in 1793.

[6] Billings cites 37 words from the language of the "Settled Chukchi" and Kodiak islanders.

Billings' statement that the language of the "Settled Chukchi," that is, of the Asiatic Eskimos, is related to that of the "Kodiak islanders" is correct; as L. S Berg wrote:

> All the northern and western coasts of Alaska are entirely settled by Eskimos. They live on the east coast of the Alaska Peninsula, north of Cape Ivanov (which is opposite the Shumagin Islands), farther on the northern part of the Alaska Peninsula, on the islands of Kodiak and Afognak, on the southern shore of the Kenai Peninsula, and finally, on the shores of Chugach or Prince William Sound and to the east approximately to the mouth of the Copper River. In addition, on Kodiak and the mainland opposite, and toward the north to Iliamna Lake, live the Koniag Eskimos (Berg 1946:196).

Thus, to Billings's credit, it is possible to state that he pointed to the linguistic commonality of the Asiatic Eskimos and their neighbors on the coast of the American mainland and islands. However, Billings's conclusion that the Eskimos appeared on the Asian shore as a result of immigration from America is fundamentally unreliable.

F. P. Wrangel and F. F. Matyushkin made a substantial contribution to the study of the Eskimo problem at the beginning of the nineteenth century by F. P. Wrangel and F. F. Matyushkin. Wrangel and Matyushkin's journey along the "northern shores of Siberia and the Arctic Ocean," which Wrangel (1948) described, contributed much new information to the study of the history and ethnography of the peoples of extreme northeastern Siberia. The customs, religion, traditions, dwellings, and dress of the Chukchi and, to some extent, of the Eskimos described by Wrangel and Matyushkin are of significant interest even now.

Wrangel clearly delimited the Chukchi and Eskimos both territorially and ethnically. He wrote:

> The Reindeer Chukchi . . . occupy the mountainous part of the country and, making up the most substantial human population, can be considered as owners of the Chukotka land. On the coasts of Anadyr Bay live a people called Onkilony, that is, maritime, by the Chukchi, from whom they are entirely different in body build, dress, and language (Wrangel 1948:310, 311).

Wrangel's notes inform us of the Chukchi traditions of the "Shelagi and Onkilony," who undoubtedly must have had some relationship to the Eskimos. Thus, speaking of a people who once existed, "the Shelagi, who lived in the coastal tundra lying to the east of the Kolyma," Wrangel wrote: "They were forced out of here by the Chukchi. From the Shelagi, Cape Shelagskii obtained its name. The Chukchi call this people Chaudzhan or Chavacha, and the river and bay Chaun or Chavan" (1948:310). On Cape Shelagskii, one elder of the Chukchi "said he was a descendant of the ancient Shelagi, or, as the Chukchi usually say, Chavany, who many years ago moved to the west along the sea coast and never returned. From the name of this people, the rivers and bay obtained the name Chavan, or Chaun" (Wrangel 1948:295).

Wrangel, having posed the question of the Shelagi's origins, did not resolve it.

Unfortunately, this question remains unanswered. Wrangel expressed the idea that "this numerous and strong people was almost entirely annihilated in a short time by epidemics, starvation, and other illnesses" (1948:310).

The question arises: who were the Shelagi (or, as the Chukchi call them, "Chaudzhan" or "Chavacha") who disappeared? Were the Chaun River and Chaun Bay given their names based on the name of the people who formerly lived there? Who lived on Cape Shelagskii, and where did the name of this cape come from? Wrangel, Jochelson, Bogoras, and Berg turned to these questions (Sergeev 1948:411). The last to express his opinion about the Shelagi was M. A. Sergeev, who wrote:

> The Shelagi are an unknown ethnographic group who evidently lived along the polar coast and on adjacent islands to the east of Cape Shelagskii, which obtained its name from them. . . . The Shelagi-Chevany are evidently an eastern group of the Chukchi that separated from the bulk of its people (Sergeev 1948:416).

Unfortunately, the Arctic coast from the mouth of the Kolyma River to Cape Dezhnev has been quite insufficiently investigated by archaeologists even up to the present time. And the question of the Shelagi is still far from completely resolved. It is doubtless that the Shelagi who lived along the seacoast must have had some relationship with the Eskimos since this region has traces of early Eskimo culture (Bogoras 1934:10, 1949:33; Vdovin 1944:252). Both the remains of Eskimo-type earthen houses and the toponymics speak to this likelihood (the majority of settlements along the coast of the Arctic Ocean bear Eskimo names, and Cape Shelagskii is called Erri in Eskimo).

No less interesting is the Chukchi tradition about the Onkilony that Wrangel mentioned,[7] writing that:

> 200 years ago the Onkilony people occupied the whole Asiatic coast from Cape Shelagskii to [the] Bering Strait. The tradition is corroborated by the fact that along the whole expanse here are seen traces of huts that are very different from those in which the Mountain Chukchi live. Judging by the remains, these huts were sunk somewhat into the ground and covered by whale ribs and earth. (Wrangel 1948:311).
>
> They say that the language of all the people was unintelligible to the wandering Deer Chukchi and similar in much to the dialect of the Settled Chukchi on the shores of [the] Bering Strait, who continue to live in earthen huts constructed of whale ribs with only one entrance, in the top. However, it is sufficiently demonstrated that the Settled Chukchi composed with the Aleuts and Greenlanders one generation spread along the shores of the Arctic Ocean from the eastern edges of America to Cape Shelagskii (Wrangel 1948:298).

Made as early as 1824, Wrangel's conclusion that Eskimos, or, as he called them, Onkilony, once lived along the stretch from Cape Shelagskii to America is entirely correct and was later corroborated by Soviet scholars.

Further, in the traditions it was said: "Severe animosity between the Onkilon elder Krekhai and the head of the Deer Chukchi, Errim, turned into internal warfare. Krekhai was defeated and fled with his people. Since then the shore has been abandoned" (Wrangel 1948:311). The question, were Krekhai and his people Chukchi or Eskimos? was answered in 1944 by I. S. Vdovin: he believes that Krekhai was the leader of a group of Chukchi (Vdovin 1944:254), and wrote:

> Krekhai was forced, along with his kinsmen and deer (so says tradition), to flee. He moved west, stayed some time at Ryrkaipii (present-day Cape Shmidta) and, according to one version of the legend, sailed in baidarkas from Ryrkaipii in an unknown direction; according to another version, he went west and initially settled on the Medvezh'ie Islands (opposite the mouth of the Chukoch'ya River) but soon returned from there to the mainland and again went west (Vdovin 1944:254, 255).

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[7] "Onkilony" or "Ankalit" are what "the Coastal Chukchi call themselves and the rest of the coastal residents" (Bogoras 1934:3). The toponymics and material culture of the coast of the Arctic Ocean from Cape Shelagskii to Cape Dezhnev point to the fact that up to the arrival of the Chukchi the Eskimos lived here.

This passage attests to the fact that Krekhai could not be Eskimo inasmuch as, among the Eskimos, there was no reindeer herding. Vdovin suggests that

> the reality of this tradition is quite possible [since] Sergeant Andreev in 1763, being on the Medvezh'ie Islands, found there the remains of earthen dwellings, still rather well preserved, and neither Andreev nor his predecessors found people on the islands; there were no traces there that would point to the fact that the inhabitants of these earthen huts perished, and no objects of domestic utensils were found in the earthen huts. This provides a basis for supposing that the people abandoned these earthen huts and went away (Vdovin 1944:254, 255).

Using the information gathered by Andreev about the people who occupied the Medvezh'ie Islands, Vdovin concluded that

> probably these islands were also the first refuge of the Chukchi, led by Krekhai, who then moved to the mainland and occupied the seacoast in the region of the Bol'shaya and Malaya Chukoch'ia and the Alazeya Rivers. Having moved to the mainland, they went to these islands to hunt walrus, which was reported as early as 1647 by M. Stadukhin. Thus, in the seventeenth century, in addition to the primary bulk of the Chukchi who occupied the territory from Bering Strait in the east to the Chaun River and Chaun Bay in the west there was another group of Chukchi who were separated from their fellow tribesmen by several Yukagir tribes and who lived in an expanse between the Kolyma and Alazeya Rivers, to which they moved from the Medvezh'ie Islands, evidently, shortly before the arrival of the Russians (Vdovin 1944:255).

Thus, Krekhai was chief of the group of Coastal Chukchi who moved from the Chukchi Peninsula west before the first Russian explorers arrived; and, consequently, Wrangel made a mistake in this case, considering Krekhai an Eskimo.

The works of Wrangel and Matyushkin remain a valuable scientific source, a profound ethnographic description of the population of extreme northeastern Asia.

In the 1820s and 1830s in the Russian possessions of America, the missionary I. Veniaminov (I. E. Popov-Aginskii) studied Russian America extensively. Veniaminov's whole life was dedicated to studying Russian possessions across the ocean. A thoughtful and profound investigator, Veniaminov spent many years studying the history, ethnography, and language of a people related to the Eskimos—the Aleuts. The materials Veniaminov collected and published on the Aleuts and the Eskimos of Kodiak Island more than 100 years ago are of great scientific interest even today, especially for comparing the Aleut and Eskimo languages. Veniaminov considered that

> the Kad'yak [Koniag] language has entirely the same form as the Unalashkan [Aleut] language, so that their fabrics are as if cast entirely in one and the same form, but only with modification of the very extremities of the forms. Thus, for example, the property and division of cases in this and the other language are entirely the same (Veniaminov 1846:27).

Further, pointing to the commonness of the Eskimo and Aleut languages, he wrote: "In the Kad'yak [Koniag] language there is no distinction in gender, as in all American languages. There is one common gender. There are three numerations (as in Unalashkan): single, double, and multiple" (Veniaminov 1846:29). Veniaminov quite clearly pointed to the difference between the Aleut and Eskimo languages, on the one hand, and the languages of the northern Indians—the Koloshi or Tlingit—on the other: "American languages are separated by their form into two main kinds; one entirely different from the other, namely: the Unalashkan and the Koloshi. To the first form belong languages of the Unalashkans and the Kad'yaks" (Veniaminov 1846a:7, 8). He observed: "The Kolosh are of an entirely different origin than the Aleut and all other peoples inhabiting Russian America" (Veniaminov 1984:380), and wrote:

> In their appearance, ways of life, and customs, the Fox Island Aleuts more closely resemble the North Americans and particularly the Kad'iaktsy [Koniag]. The Aleut language (totally different from that of all the surrounding peoples), has the same structure as the Kad'iak tongue, which is known to all the peoples inhabiting the northwest coast of America, and even the language of the Chukchi appears to be a branch thereof also (Veniaminov 1984:60).

As seen in the above quotations, Veniaminov made an interesting supposition that is supported by the facts, that is,

> that the Aleuts and other Kad'iak-speaking Americans, some time before their settlement on the American continent, were neighbors. The first lived to the south and nearer to Kamchatka; the latter lived to the north and closer to Chukotskii Nos. Then, being pressed, as time went on, by other peoples, they were compelled to migrate to their present residence—the first from Kamchatka to Bering Island and farther; the latter (and probably much earlier) across the Bering Strait to America and perhaps following the route pioneered by such other peoples as the Kolosh, the Indians, the Mexicans, etc. (Veniaminov 1984:60).

As is evident, Veniaminov believed that the Indian tribes' settlement of America occurred from Asia and they settled in America substantially earlier than did the Eskimos and Aleuts. On the question of the route settlers bound for the Aleutian Islands took, Veniaminov thought that the Aleuts had moved from Kamchatka to Bering Island and to farther islands. To corroborate of this he cites the fact that

> in clear weather from the Kamchatka shore, the Near Islands can be seen from Bering Island, and from the Near Islands one can see several other islands at one time. This could have indicated for them their route. How could the Aleuts cross from the mainland? It is not necessary to invent any eventualities. One may say positively that the Aleuts traveled by boats or by baidaras (Veniaminov 1984:59).

Veniaminov did not lay claim in his work to a complete answer to the questions. He strove, "seeing with what zeal, with what indefatigability many scholars tried to collect every kind of information and how even the smallest in such kind of finds was interesting to them" (Veniaminov 1846b:1), to describe and bring to a broad circle of readers the materials he collected on the language, history, and ethnography of the Aleuts and Eskimos. Thus, in the preface to the work *An Essay on the Grammar of the Fox Island Aleut Language*, the modest scholar wrote in 1834:

> I decided if not to compile a complete grammar then at least to set forth some of the rules of grammar of the Aleut language, in the supposition that they perhaps will be of value to someone for some reason on the origin of this language and for historical conjectures (Veniaminov 1846b:1).

In fact, by analyzing the data Veniaminov supplied in his dictionary and grammar of the Aleut language, by taking into consideration his *Notes on the Tlingit and Koniag Languages* (Veniaminov 1846), and by carefully comparing the Aleut language with the Eskimo, it was possible to tentatively conclude: that (1) several elements common to the grammar and individual lexical forms of both languages show that the Eskimos and Aleuts in some very distant period were a single linguistic group, (2) individual nominal stems common to both languages can be traced in their roots, and words common to both languages are revealed chiefly by words of the basic lexicographic stock. However, there are very few parallels between these features and precisely because it can be concluded that the Eskimo-Aleut unified ethnic group diverged many centuries earlier than did the separation of the Eskimo-Asiatic ethnic union, which spread then to the American mainland and to Greenland. Finally, (3) the difference in the vocabulary and grammar of the Aleut and Eskimo languages shows that after these languages diverged a whole series of new features and began to develop in them according to their own internal rules.

Unfortunately, all the above represents only a further problem for scientific investigation. Linguists and historians are faced with the task of working out in detail the commonalities and differences between the Eskimo and Aleut languages and the material culture, because it will never be possible to completely answer the Eskimo problem without studying when the Aleuts of settled northwestern America and what route they took to get there. Relying on his and his predecessors' research, L. Shrenk illuminated questions concerning the settlement of Northeast Asia and northwestern America and, in his book *On the Non-Russian Peoples of the Amur Region,* was able to study the question of Northeast Asia's settlement in a more substantial way. Thus, he was the first to use the linguistic, anthropological, and historical-geographic data to unite the "regional peoples of Northeast Asia": the Gilyak, Ainu, Kamchadal, Koryak, Chukchi, Yukagir, Aleuts, and Eskimos "under the name Paleo-Asiatics, or, more precisely, Northeast Paleo-Asiatic Peoples."[8] Shrenk concluded that the

> earlier expansion and branching of these peoples, without doubt, occurred in Asia, closer to the center of the mainland.... [U]nder the push and pull of stronger and more vital peoples, a large part of these early tribes was gradually absorbed and finally disappeared, and that only a few, or perhaps only individual representatives of them, were preserved on small plots of land along the boundaries of regions occupied by their oppressors, or, in somewhat larger number, along the edges of the mainland, which they reached, repeatedly retreating before new arrivals (Shrenk 1883:257).

He further noted:

> In precisely these cases, when they succeeded in founding a new homeland in the islands or on the peninsulas extending farthest from the mainland, could their physical characteristics, along with their native language, have been, and must have been, preserved in larger degree. Nevertheless, the inevitable mixing with new arrivals had to influence these peoples, and some of their physical characteristics were smoothed, and . . . [consequently,] features common to both them and the other people appeared. Perhaps it is thus possible to explain, as stated above, that among all present-day peoples of the northeastern outskirts of Asia, in spite of the peculiarity of each group's language, the Mongoloid type predominates in the structure of the skull and face, though several of them also have some distinctive, positively non-Mongoloid features, which are the more strongly manifested the more the people succeeded in avoiding further Mongol-Tungus influence by emigrating to nearby islands, as was done, for example, by the Ainu (Shrenk 1883:257).

The data of anthropology and folklore made it possible for Shrenk to correctly conclude:

> The Eskimos, if we judge by the features of their face and by their traditions, are very probably of Asiatic origin. Hence, taking into account the Mongoloid structure of their faces, it is possible to conclude that the Eskimos emigrated to America from Asia across the Bering Strait. Probably, northern America was unoccupied at this time, which made it possible to move unhindered from the Bering Strait southward—to Alaska, Kodiak Island, and the islands of Chugach

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[8] The term "Paleo-Asiatic," used for the first time by Shrenk, exists in the literature up to the present time. Shrenk also assigned the Yenisei Ostyak, Kott, Arin, and Assan to the Paleo-Asiatics.

> Bay [Prince Willliam Sound], where they encountered the Koloshi, and to the east—to the shores of the Atlantic Ocean (Shrenk 1883:260).

However, when speaking of the settlement of Greenland by the Eskimos, Shrenk made an error, because he used unreliable data from foreign authors, thinking that they "moved there in the middle of the fourteenth century" (Shrenk 1883:260).

It has been proven by archaeologists that the Eskimos' settlement of Greenland occurred before the Viking arrival there at the end of the first millennium A.D.[9]

"If the homeland of the Eskimos and Aleuts was somewhere in Asia," wrote Shrenk, "then the question is: what could have prompted them to leave it?" Shrenk looked for the reason for migration in the movement of peoples:

> The Gilyak, Ainu, Kamchadal, Koryak, Chukchi, and other peoples, being squeezed by present-day Siberian non-Russians to the northern and eastern fringes of Asia, in turn pressed the Eskimos and Aleuts, finally, forcing them to cross Bering Strait and to cross to Bering Island and into America.[10] In spite of the Eskimos' vast distribution and divergence in America, they still have one branch in Asia, their original homeland, thus it does not matter whether or not this tribe is the remains of the previous population in Asia or if it subsequently returned there from America. Be that as it may, the Asiatic origin of the Eskimos is undoubted (Shrenk 1883:262).

Shrenk's accomplishments in resolving the issue of the Eskimo problem were substantial. Based on anthropological, linguistic, geographic, and historical data, Shrenk correctly pointed to the Asiatic origin of the Eskimos and to the fact that they settled northern America after crossing the Bering Strait. Shrenk examined the migration of the Eskimos from Asia to the American mainland and on to Greenland not as a single, isolated event, but rather as a process closely connected with the movement of other peoples.

Thus, in spite of several errors and inaccuracies, Shrenk's work is of substantial interest even at the present time.

From the 1890s to the 1930s, two outstanding Russian scholars, researchers of Northeast Asia and northwestern America—W. G. Bogoras and W. I. Jochelson—carried out scientific activity, the primary part of which was dedicated to investigation of material culture and primitive economy, the settlement by people of northern Eurasia and America, and their social structure, religion, language, and folklore.

The primary works of Bogoras and Jochelson on the history, ethnography, language, and folklore of the peoples of the extreme Northeast made them among the most important scholars on the area; today every researcher of the history of the peoples of the extreme Northeast, relies on their work to study these peoples.

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[9] In recent years the Danes, and after them some other scholars, strongly spread the version of the destruction of the first European settlers by Eskimos, who allegedly in the fourteenth–fifteenth centuries came down from northern Greenland to the south. Such a legend was valuable to the Danish colonizers who were striving to show their ancestors as "victims," "civilizers," and to depict the Eskimos as the aggressive side (Agranat 1951:11, 12; Rudenko 1972).

[10] Shrenk, like Veniaminov, supposed that the Aleuts arrived in the Aleutian Islands "from Japan through the Kurile Islands, Kamchatka, and Bering Island, consequently, by a sea route" (Shrenk 1883:261). Data from folklore on this question are very contradictory, and corroborating archaeological finds have not been made.

The range of questions that occupied Bogoras and Jochelson was extensive. In this work only those questions that have a direct relation to the issue of the Eskimo problem will be examined.

In resolving the question of the Eskimo problem, Bogoras, unlike Jochelson and several American researchers who support an American origin for the Asiatic Eskimos, developed a complex argument to suggest that the Asian branch of the Eskimos appears to be the oldest of all the Eskimo branches and that, therefore, the Eskimos moved west to east—from Asia to America—when they resettled.

Jochelson was an adherent of the old American school of ethnology. In trying to solve the Eskimo problem, he entirely shared the point of view of the American ethnologist Franz Boas. Evidently contributing to this substantially was the fact that from 1900 to 1902 Jochelson participated in the fieldwork of the Jesup North Pacific Expedition, outfitted by the American Museum of Natural History. Jochelson wrote:

> The expedition had significant and complex work in store. Above all, it was necessary to study the relationship among three ethnic groups that are encountered on the northern shore of the Pacific Ocean, the so-called Paleo-Asiatic tribes, Eskimos, and Indians. The Eskimos, a more uniform ethnic group than the other two, seemed like a wedge inserted between the Paleo-Asiatics and the coastal Indians. . . . Ethnologists, archaeologists, and geographers expressed various hypotheses about the origin and movement of the Eskimos. . . . In recent years, researchers cite the view that the Eskimos spread both east and west from a place near Hudson Bay where the pure Eskimo type was formed (Jochelson 1908a:5, 8–10).

Rejecting the view that Greenland had been settled by emigrants from Asia, to which the remains of semisubterranean dwellings undoubtedly points, Jochelson, in his other work—examining types of semisubterranean houses—expressed the correct idea that “the Chukchi borrowed the Eskimo type of dwelling, and not the other way round . . . that borrowing played a significant role there, whereas climatic conditions contributed to the spread of semisubterranean dwellings” (Jochelson 1908b:54, 56). And in addressing many issues connected with the Eskimo problem, Jochelson drew profound and fundamental conclusions, valued even today, but to resolve the question of the Eskimos’ homeland—was it in Asia or in America?—Jochelson entirely supported Boas’s unreliable point of view.

On the question of the commonality of the relationship between the Aleut and Eskimo languages, Jochelson concluded “the Unangan (Aleut—D. S.) language is closely connected with the Eskimo,” that and

> there can be no doubt about the fact that, in spite of some deviations of the Unangan language from the dialects of the Eskimo language, the basic morphology and phonetics, like a substantial part of the grammatical elements, are completely identical in both languages. . . . [W]hatever the answer to the question of the origin of the Unangan tribe, it is undoubted that the Unangan language originates from the same source as all the Eskimo dialects and in all probability comprises one of the earliest Eskimo dialects (Jochelson 1912:1031, 1032).

Jochelson, speaking about the ethnic association of the Aleuts, incorrectly concluded that “peculiarities of the material and spiritual culture, as well as the physical makeup of the Aleuts point to their close connection with inhabitants of America, and not Asia” (Jochelson 1925:122). L. S. Berg expressed this same idea about the American origin of the Aleuts (Berg 1946:231).

On the question to whom belonged the remains from sites in the Medvezh'i Islands, which were undoubtedly indirectly connected with the Eskimo problem, Jochelson concluded that though at the present time there are no Yukagir living on the seacoast, on the Medvezh'i Islands opposite the mouth of the Kolyma River, there were ruins of semisubterranean dwellings that belonged to the early Yukagir, but no remains of their former culture have been found. To corroborate this idea, Jochelson adds that "one often encounters stories about sea monsters often in the mythology of the Yukagir tales, and the common name for sea mammals is 'čòhen-fotow,' that is, 'wild sea deer'" (Jochelson n.d.:12). Bogoras supposed that the remains of the dwellings in the Medvezh'i Islands belonged to the Shelagi (Bogoras 1934:7). At present this controversial question is not far from being completely resolved. I. S. Vdovin advanced the rather well-corroborated proposal that the ruins of semisubterranean houses in the Medvezh'i Islands belong to the Chukchi (Vdovin 1944:255).

Jochelson urged the study of individual ethnic groups not in isolation from each other but rather in connection with one another: "From the similarity of the spiritual and material culture of these tribes we can conclude that in early times they had connections among themselves" (Jochelson 1908a:56). Jochelson's idea has been confirmed by Soviet scholars. Jochelson's work made a large contribution to the study of the Yukagir, Koryak, Aleuts, and other peoples of Northeast Asia and northwestern America, but in the resolution of the Eskimo problem he made several serious errors. As Rudenko notes:

> Here in Russia, except for Jochelson, who sided with the theory of the American origin of the Eskimos, the dominant theory has been always that of their Asiatic origin. Scientific support for it was provided in the Soviet period (Rudenko 1972:15).

Bogoras's works contributed much to the study of the history, ethnography, and languages of the peoples of the extreme North.

Bogoras, along with Jochelson, actively participated in the Yakut Expedition of the East Siberian Division of the Russian Geographic Society funded by I. M. Sibiryakov (1894–1897), and in the American Museum of Natural History's Jesup North Pacific Expedition (1900–1902), which was in fact a continuation of Sibiryakov's initiatives. Bogoras, like Jochelson, was influenced to a certain degree by the so-called American school of historical anthropology (the father of which was Boas) in his research. However, this did not hinder Bogoras in the resolution of the Eskimo problem, and unlike Jochelson, he expressed opposition to Boas's view concerning the Eskimos' homeland. Bogoras's basic position that the Eskimos proceeded from Asia to America, and not the reverse, remained firm and is now corroborated by materials from archaeological excavations. Bogoras was not only an ethnographer and historian but also an outstanding linguist. It is to him that first place in the study of the language of the Asiatic Eskimos belongs. Based on a large amount of comparative material on the language of Alaskan, Canadian, and Greenland Eskimos, Bogoras succeeded in partially answering the question of the origin of the Eskimos on the American mainland and in Greenland.

Examining the problem of ethnogenesis in extreme Northeast Asia and northwestern America, Bogoras supposed that "on both shores of the Pacific Ocean, in Asia and in America, the Eskimos are a wedge that entered from the north and broke the continuous chain of closely related tribes" (Bogoras 1910:4). Soviet scholars' broad archaeological and anthropological investigations subsequently disproved Bogoras's view on this question the Eskimos origins. But for his time, Bogoras expressed the most well substantiated proposal as to the Eskimo problem.

Bogoras's acquaintance with the Asiatic Eskimos' language permitted him to establish that the Chukchi in Northeast Asia arrived after the Eskimos and that the latter were gradually assimilated by the Chukchi. He wrote: "Thus, some names of Chukchi settlements on the coast of the Arctic and Pacific Oceans sound like Eskimo (in conformity with the Aivan dialect) and their meaning can be derived from the Eskimo language" (Bogoras 1934:10). He went on to compare the names of several settlements:

Chukchi name	**Aivan name**	**(English translation)**
On the Arctic coast		
Nesqən	Naskok	(“head”)
Kuluci	Kulusik	(“old icy mountain”)
Iqəlurun	Iqaluwgak	(“*Gadus vachna*-a type of cod fish”)
On the Pacific coast		
Nigc′en	N′xc′rak	(“one who has seals”)
Nunamun	Nunamo	(“end of the mainland”)
Cew′n	Savik	(“knife”)
Cecin	Tesik	
Meciwm′n	Mesik	

As is apparent, Bogoras first used toponymic data as irrefutable evidence that the Eskimos were the earliest occupants of Northeast Asia. Bogoras also expressed this idea in the analysis of some elements of the grammar of the Eskimo language, having shown that “remarkable qualities of the Asiatic-Eskimo dialect compel one to ask: is it not the primary form of the Eskimo language, which is preserved far off to the side in the Asiatic East with fewer changes than the other dialects?” (Bogoras 1949:43). Having correctly proposed and adequately defended his theory, Bogoras, however, later contradicts himself when he adds that “the indicated qualities of the Asiatic-Eskimo dialect, of course, by no means resolve the question of an Asiatic homeland for the Eskimos” (Bogoras 1949:44). Vdovin is undoubtedly right when he considers that “here some inconsistency in W. G. Bogoras’s views is expressed” (Bogoras 1949:44). Thus, Bogoras’s early works on the ethnology of the Eskimos, which was based on materials he collected during his short stay among the Asiatic Eskimos—from May 2 to June 7, 1901—only prompted him to ask only more questions regarding the Eskimo problem, namely, (1) the settling apart, and how many numbers of Asiatic Eskimos were there? (Bogoras 1910:1, 2); (2) “the meaning of the names of many Chukchi villages on the coasts of the Arctic and Pacific Oceans can …be attributed directly to the Eskimo language”? (Bogoras 1910:3); (3) “the semisubterranean dwelling is …typical for the Eskimos”? (Bogoras 1910:3); among others.

Bogoras approached these questions on the Eskimo problem much more fully and profoundly in the second period of his scholarly activity—after the Great October Socialist Revolution.

As soon the Soviet government took power, it sought to radically reorganize life for the ethnic groups of the extreme North, and to conduct an in-depth study of their history.

The October Revolution began a new era in studying the history of the peoples of the North. The complexity of the new government’s goals required a new method for studying the history of peoples of the North—it pulled together not only historical material but also material from ethnography, archaeology, and linguistics to make sense of it from the Marxist-Leninist methodological position.

Soviet scholars’ work to discover the Eskimos’ origins and to learn about their culture exemplifies the new approach to the historiography of the peoples of the extreme North.

In 1921 Bogoras (who, from 1918 onward, worked for the Academy of Sciences’ Museum of Anthropology and Ethnography), in his work *New Tasks for Russian Ethnography in the Polar Regions*, called for scholars to “take a new step forward and more carefully outline and research ethnographic regions lying within the borders of the vast realm of the Russian peoples” and examine “the question of the vast Russian polar regions, that is, practically speaking, the whole polar region of the Old World in Europe and Asia,” because

> the Arctic Ocean is a common central sea for the whole surrounding Arctic realm and along its shores, in spite of the severity of climatic conditions, occurred and occur the expansion and interaction of cultures. It can be said of the separate, circumpolar culture that it is very distinctive and in many ways different from the culture of more southern latitudes. This culture bears in it the stamp of adaptation to the conditions of a northern climate with ice-covered rivers and seas, the absence of fuel in the tundra. . . . Northern occupations on sea and dry land, domestic animals and means of transportation, dwelling and dress are in many ways identical throughout the extent of the polar realm (Borgoras 1921:3, 4)

Borgoras's assertions are supported by the fact that "this circumpolar culture originated in the Arctic region and peoples of different origins, who arrived from the south along different meridians and for different reasons, adopted it from earlier inhabitants" (Bogoras 1921:3, 4).[11]

Speaking of the intertribal borrowings of antiquity, Bogoras wrote that "only research of the polar ethnographic region in all its breadth can throw new light on these intricate and complicated intertribal relations. Thus, the broad of circumpolar culture should be posed both for the Old World and for the New," but, nevertheless, "the circumpolar culture is more substantial and varied in the Old World" (Bogoras 1921:9).

He further wrote:

> The question of the origin of the circumpolar culture is closely connected with another no less important question—the settlement of the New World, since it is in the Bering Sea's polar region that the only bridge that we know of connecting the Old World to the New is found. This also raises the question of the origin of the Eskimos, who now live almost exclusively in polar America but who also still live on the easternmost capes of the Asian mainland (Bogoras 1921:4, 5).

The most important ethnic problem of the Bering Sea is the question of movement of peoples along the so-called Bering Land Bridge, the presumed northern isthmus between Asia and America. "In recent times," wrote Bogoras, "the proposal was to call this isthmus Beringia. . . . [T]he settling of America or, more precisely, of the northwestern part of North America proceeded from Asia along the indicated isthmus of Beringia" (Bogoras 1927).

Bogoras, using both linguistic and folkloric materials and as data from the material culture as ethnographic sources, expressed the idea that "the Asiatic branch of the Eskimos is the earliest of all, and . . . in connection with this all movement of the Eskimos advanced in one direction, from west to east" (Bogoras 1927:39).[12]

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[11] To this it should be added that, as I. S. Vdovin (1950:75) points out, these borrowings sometimes did not bear a peaceful character. Thus, "assailing the Eskimos, the Chukchi at the same time adopted from them the technique and methods of sea mammal hunting, which created the condition and prerequisite for subsequent transition to permanent residence on the sea coast. . . . Such a transition was all the more possible in that here had been grasped a prepared, fully worked out technique of sea mammal hunting with its specific tools and means of hunting (harpoons, baidars, and so on), created by the Eskimos before their contact with the Chukchi." Vdovin believes that clashes of the Chukchi with the Eskimos probably occurred in the third to fifth centuries A.D., when the Chukchi already had domesticated deer, and this indication is extremely important in the resolution of the origin of the Chukchi. He notes that the terminology of the name of the tools for sea hunting and their individual parts were in significant degree borrowed by the Chukchi from the Eskimos. With the transition to more or less permanent settlement, the Chukchi also borrowed the Eskimo semisubterranean dwelling. In addition, "along with the culture of sea mammal hunting, the Chukchi also absorbed the religious ideas which existed among the Eskimos."

[12] W. G. Bogoras (1919:454), as early as 1919, wrote in the article "On the So-Called Language of Spirits (Shamanic) among the Different Branches of the Eskimo Tribe": "Such a study of the Asiatic Eskimo dialect forces one to recognize it as the earliest of all the Eskimo dialects, and in some regards even the primary form of the Eskimo language."

In all his works, which are devoted to at least some degree to the Eskimo problem, Bogoras, though not always consistently, firmly defended his basic position that northwestern America was settled by peoples coming from Asia, and he emphasized that the Asiatic Eskimos and their culture preceded those of the American and Greenland Eskimos. Snubbing the assertions of pseudoscience, Bogoras noted:

> It must be said that American scholars are very persistent in their search for scientific perspectives that assert that America was the starting point for world migration. The American scholar Amegino once steadfastly cultivated the theory of Tertiary man in Argentina and of his spread from there to all lands on Earth. The idea of Beringia does not suppose such elaborate configurations. American scholars, and among them even Boas, stopped at mentioning that migration proceeded from America to Asia (Bogoras 1927:38).

Russian scholars “try to establish the aboriginal, early Asiatic origin of the Paleo-Asiatic tribes and, instead of an “Americanoidness” for the Paleo-Asiatics, propose an Asiatic origin for the corresponding American tribes, particularly an Asiatic origin for the Eskimos” (Bogoras 1928:235, 236).

Bogoras also defended this theory about the Asiatic origin of the Eskimos in his last works, writing: “The chain of tribes of the northern part of the Pacific coast, in the past, spread in a complete arc from Asia to America,” and the Eskimos’ settlement of northwestern America via the Bering Strait occurred “in a period, though distant, comparatively later than the first movement of human groups from Asia to America across the so-called Beringian Land Bridge” (Bogoras 1936:249).

Bogoras’s contribution to the study of Northeast Asia’s peoples is difficult to overestimate. Vdovin observed: “W. G. Bogoras was not an armchair scholar. He always strove to coordinate his scientific knowledge with the practical applications of Soviet and cultural construction in the North. He was a patriot of the cultural development of the Soviet Union” (Vdovin 1944:6).

While studying Northeast Asia, Soviet scholars also carried out research along the northwestern Arctic coast. One should especially note V. N. Chernetsov’s archaeological surveys of the Yamal Peninsula. Chernetsov discovered the remains of some kind of early maritime culture there that “differed essentially from the culture of the peoples who live in this region now” (Chernetsov 1935:109). He noted:

> The basic features characterizing this culture are: (1) developed hunting for sea mammals, especially walrus; (2) the presence of skin boats of the Eskimo-kayak type; (3) sedentary villages with pit houses by the sea, often located at the ends of capes; (4) a developed bone-working industry (Chernetsov 1935:109).

He also found ceramics and observed that whalebone had been used as a structural material in some places (Chernetsov 1935:109).

As is evident, many features characterizing this culture “make it similar to the polar maritime culture of the northeastern extremity of Asia and North America.” However, the similarity of this culture to that of the early Eskimos’ culture may have been caused by convergence; thus, the similarity of the culture’s basic elements may have resulted from common natural conditions: such as (1) when Arctic hunters found an abundance of sea mammals, they were inclined to settle in the place; (2) both cultures were accustomed to severe climatic conditions; (3) both cultures were used to constructing shelter without wood. Therefore, it is not yet possible to speak of the ethnic closeness of the two peoples, and Chernetsov correctly points out in the conclusion of his work that “to determine the ethnic association of the bearers of the Yamal culture, at least at present, is not possible” (Chernetsov 1935:132).

The lack of evidence pointing to a kindred connection between the Yamal Peninsula’s maritime culture and the early Eskimos’ culture did not stop A. M. Zolotarev; he wrote: “It is very tempting to connect this culture with the early culture of the Yamal Peninsula” (Zolotarev 1937:51). Consequently, Zolotarev, in examining the origin and spread of the early non-Eskimo culture, hypothesized that “this culture appeared in the region of Bering Strait, [coming] from the west, in all probability, and moving east along the Arctic coast of Siberia" (Zolotarev 1937:51), while some elements of Paleolithic tradition in Eskimo art led Zolotarev to the idea that "the ancestors of the Eskimos were in the vanguard of the movement of a southern Siberian population to the north, which began at the end of the Paleolithic and in the early Neolithic eras" (Zolotarev 1937:53).

The lack of a sufficient basis for Zolotarev's proposals was later demonstrated in the works of the distinguished Soviet archaeologist A. P. Okladnikov. In the summer of 1946, he carried out archaeological research in the valley of the Kolyma River and along part of the Arctic coast from the mouth of this river to Cape Baranov. As a result of these investigations, Okladnikov concluded that "the early (Eskimo) maritime culture that existed for several centuries around the mouth of the Kolyma River does not reveal at present a direct connection with the continental subarctic culture that spread out near it in the forest-tundra zone. There was evidently not only a large chronological break between them, but also a cultural-ethnic one." It can be supposed, Okladnikov further shows, "that in the Kolyma valley two tribal groups, different in culture and origin, met. In the earliest times, one of them moved from the west through the forest-tundra. These were deer hunters and fishermen. Later, sea-mammal hunters—the ancestors of the Eskimos—began to settle [there, moving] from east to west in the until-then uninhabited expanse along the seacoasts and islands" (Okladnikov 1947:182).

S. I. Rudenko notes that "the ancient pit houses of hunters, probably of the Nenets [Samoyed], discovered by Chernetsov on the Yamal Peninsula . . . failed to yield a single object typical of Eskimo culture" (Rudenko 1972:176). Furthermore, discussing art, Rudenko said that "the history of Eskimo art also points to southern origins, rather than to ancient connections with the west" (Rudenko 1972:177).

Thus, Zolotarev's hypothesis of a northwestern origin for the Eskimos is not likely true.

A statement Zolotarev made should be noted, namely, that "the Chukchi and Koryak are descendants of the early Eskimos who turned into deer herders" (Zolotarev 1938:86). To counterbalance this view, Rudenko, citing materials from archaeological excavations on the Chukchi Peninsula, showed that in the first half of the first millennium A.D. there were many new, "Siberian" elements in Eskimo culture, which he connects with the settlement of a Chukchi-Koryak group of tribes in these regions (Rudenko 1972:177). Besides the archaeological indicators that the Chukchi were new arrivals on the Chukchi Peninsula, there is historical-ethnographic data, supported by linguistic material, that also attests to this. On the basis of such interdisciplinary study, Vdovin concluded that "at the moment when the Chukchi first encountered the Eskimos, and this evidently occurred during the third to fifth centuries A.D., the Chukchi had already domesticated deer, [as evidenced by the fact that] the Eskimos call the Chukchi *K'ui-il'yk*—'Deer People,' or 'people who own deer'—from the word *k'uin'ik*—'domesticated deer'" (Vdovin 1950:80).

Consequently, the Chukchi were mainland migrant hunters of wild deer, who upon arriving on the seacoast, borrowed the culture of sea-mammal hunting from the Eskimos and gradually began to hunt sea mammals, and fish, as additional means of livelihood. As well, the Chukchi used a ready-made, perfected, and established technique of sea-mammal hunting that the Eskimos had created before their contact with the Chukchi.

Thus, Zolotarev's proposal that the Chukchi and Koryak are descended from early Eskimos is totally unreliable. The fact that the Chukchi and Koryak, on the one hand, and the Eskimos, on the other, are peoples of entirely different origins is clearly evident when one compares the languages of these peoples. The grammatical structure and basic lexical inventory of the Chukchi and Koryak languages are of an entirely different form from those of the Eskimos.

The archaeological investigations of A. P. Okladnikov, who for many years studied sites in central Siberia, the Amur, and the Arctic coast, are of great scientific value. A huge quantity of data permitted

Okladnikov to correctly pose questions concerning the origin of Eskimo culture and to contribute new scientific evidence on the Eskimos' origins.

Okladnikov believes that "in its origin, the early Eskimo culture was connected not with the west, but with the southeast, and not with the Paleolithic, but with the Neolithic. It is only the northernmost link of Pacific coastal cultures, which belonged to settled tribes, whose chief occupation was fishing, in combination with sea-mammal hunting.

"The basic elements of early Eskimo culture are spread very widely in the Pacific zone. Such were: (1) a sea-mammal hunting and fishing economy; (2) a corresponding, specific inventory containing toggling harpoons with socket and spurs in the base; included here are distinctive slate points not known in Siberia or in general north of the Amur and the Wall of China; (3) permanent settlements with pit houses as the primary type of dwelling; (4) spiral or curvilinear decoration; (5) the cult of female deity-ancestors and, connected with these, totemic ideas of the marriage of a goddess to a dog. These elements are known from deep antiquity in Kamchatka, on the Amur, on the Kurile and Japanese Islands (the Old Ainu culture), in southern China, and to some degree even farther south, as far as the Philippines and New Zealand" (Okladnikov 1941:30, 31).

Consequently, the "similarity," noted by Zolotarev, "between the Eskimo and the Upper Paleolithic culture of the West, even of early Siberian Magdalenian, judging by the sites of the Mal'ta and Buret type, is tentative" (Okladnikov 1941:29). Late Neolithic sites of Eskimo culture, along with sites of the same period in Kamchatka and Sakhalin, for which semisubterranean dwellings, lamps used for light and heat in these dwellings, crude ceramics, and dogs used as draft animals are characteristic, in Okladnikov's words, "both in geographic and cultural-historical regard are a kind of transitional link between the early Amur Neolithic in Southeast Asia and Arctic sites" (Okladnikov 1939:513).

Thus, this shows once more that the Eskimo culture is genetically connected with Southeast Asia, and not with western Siberia, and in any case, not with northwestern America. The fact that the Eskimo culture of Northeast Asia is earlier than the American, was in part shown by A. V. Machinskii, who in 1941 published two collections gathered on the Chukchi Peninsula by Bettak and Borisov (Machinskii 1941). He showed that the Eskimo culture in northeastern Siberia during the Old Bering Sea period resembled the culture on the Alaskan coast and on the islands of the Bering Strait.

Machinskii turned his attention to the presence in these collections of nephrite artifacts and posed the question of an early connection between Eskimo culture and the culture of Northeast Asia. Okladnikov (1947) showed in his work "Early Cultures of Northeast Asia Based on Data from Archaeological Investigations of 1946 in the Kolyma District" exactly where these cultures encountered one another. He demonstrated that early Eskimo sites at Baranov Kamen', together with the sites in the Medvezh'ie Islands that were first noted by Russian travelers at the beginning of the eighteenth century, are the westernmost of the presently known sites of early Eskimo culture.

The investigations of Bogoras, Okladnikov, and other prewar Soviet scholars showed that the Eskimo culture of Northeast Asia was substantially older than the culture of northwestern America and Greenland. Soviet scholars also established a connection between the early Eskimo culture and Southeast Asia, thereby contributing a new page to the history of the study of the Eskimo problem.

In 1944, I. S. Vdovin's work "The Resettlement of Peoples of Northeast Asia in the Second Half of the Seventeenth and Beginning of the Eighteenth Centuries" was published; it shed new light on several questions closely connected with the issue of the Eskimo problem, and, in particular, substantially answered the question of to whom the Medvezh'ie Islands sites belonged, a question that had occupied Russian scholars for more than 200 years.

In 1945 the research of the Arctic Institute of Glavsevmorput [Board of Northern Sea Routes] on the Chukchi Peninsula provided a vast quantity of new material for understanding the Eskimos' past; as a result, Rudenko's publication on the early culture of the Bering Sea and the Eskimo problem appeared. Rudenko established that "the northern Bering Sea region, which includes the Bering Strait and its islands, and the western and eastern shores of the Chukchi Sea, has constituted a single cultural area since early times. It was the focus of the lengthy development and flowering of a specialized culture of sea-mammal hunters that subsequently spread over vast stretches of the Arctic coast" (Rudenko 1972:169).

S. I. Rudenko, writes Okladnikov, "not only gathered a wealth of new material on all the earlier-known stages of early Eskimo culture but discovered remarkable sites of the earliest, as he thought, stage—Uelen and Okvik, confirming the view that the early culture of the Bering Sea in emerged in northern Asia, and not in America" (Okladnikov 1950:33).

The dual name of the earliest stage of culture of the Bering Sea—Uelen-Okvik—is explained, Rudenko points out, by the fact that "its features were first identified at the Okvik site in the Punuk Islands, though it is represented in the purer form and more completely in our materials from the ancient site of Uwelen. . . . It is quite probable that an early phase of this culture occurs at Uwelen, and that a later one is represented at Birnirk. The early phase dates from the end of the second and the beginning of the first millennium B.C. . . . [T]he second phase may be supposed to date from the second half of the first millennium B.C." (Rudenko 1972:169, 170).

From the above, it is evident that, in Rudenko's opinion, the earliest Eskimo culture found by him at the Uelen settlement on the Chukchi Peninsula has a chronological break of approximately 500 years from the second phase of this culture in northwestern America, where it can be traced in the Punuk Islands and on St. Lawrence Island.

Characterizing the Uelen-Okvik stage of the Eskimo culture, Rudenko notes that:

> the typical semi-subterranean houses and storage pits so characteristic of subsequent phases were not yet present in this period. As a result, cultural deposits dating from that time may be identified only by the greater density of the grass cover that grows over their perfectly even surface. Dwellings at this stage were either above ground or with floors only slightly sunk below ground level, probably round in outline and paved with stones. The main occupation of the inhabitants was sea mammal hunting, though the hunting of land mammals and birds, as well as fishing, were of major importance. At the Uwelen-Okvik stage, we are already faced with an elaborate harpoon complex, which includes harpoon heads of highly intricate design, harpoon boats, and ice picks. It is precisely at this stage that harpoon heads have the most complex basal-spur arrangements. They are provided with both side- and end-blades of stone. Apart from sea mammals, bears were also hunted—their bones are found in kitchen refuse. Moreover, deer antler and walrus ivory are widely used in making a variety of implements, such as harpoon heads, arrowheads, fish-spear prongs, adze socket pieces, etc.
>
> Arrowheads, identical in form to those found in eastern Siberia at the end of the Neolithic and beginning of the Bronze Age, are no less numerous than harpoon heads and provide additional evidence of the importance of land hunting at this time. We already have specialized multi-prong bird darts and fish spears, both one piece and composite for catching large fish of the salmon family. The occurrence of sinkers and barbs of compound fishhooks indicates that fish were also caught with fishing lines. Stone tools are almost all flaked, and rubbed slate implements constitute rare exceptions. . . . As in later times, fire was made by drilling . . . . Apparently, hunting sleds with ivory runners were already in use. Pottery, if present at all, was very scarce. Uwelen-Okvik art is highly original and distinctive. It is characterized by deeply incised linear designs, by

> the fashioning of certain objects, among them harpoon heads, to suggest the form of an animal, and by the especially realistic portrayal of the human form. Social organization in this period was of primitive communal type, and matriarchy probably prevailed (Rudenko 1972:169–170).

Having first described and chronologically dated the earliest, in his opinion, stage of early Eskimo culture, Rudenko noted that:

> The next Old Bering Sea stage takes shape in the last centuries before our era in the north Bering Sea area, perhaps independently, but more probably under stimulation from cultural influences emanating from the south the Old Bering Sea stage emerged. At this time, people were living already in small quadrangular pit houses with stone floors, log walls, and long and narrow entranceways. The e subsistence basis was the hunting of sea mammals, mainly walrus. Bones found in kitchen refuse indicate that the principal food animals were ringed seal, walrus, bearded seal, and whale. The harpoon complex remained essentially the same, though a new form of harpoon head, the so-called Old Bering Sea type, made its appearance, and relatively minor changes occurred in the basic form of the harpoon-head types of the preceding stage. Reindeer were hunted inland, though rarely: artifacts of antler are few. With rare exceptions, all bone artifacts are of ivory. . . . The simple bow was used, together with a variety of arrows, some intended for warfare, as well as for hunting land animals and birds. . . . To judge from the occurrence of fish spears and the abundance of sinkers, fishing was important, though no whole fishhooks belonging to this stage have been found. It is possible that these were in the form of a simple bone barb inserted in a wooden shank. As in the preceding stage, flaked stone tools of a wide variety of types definitely predominate over tools of ground stone, though the latter, particularly adzes and knives, already appear in substantial numbers. With rare exceptions, stone side-blades occur only on harpoon heads. Both the kayak and the umiak were in use. Sleds with ivory runners were of two kinds: heavy sleds for hauling loads, and light hunting sleds. Ice creepers were also known. Pottery vessels and pottery lamps were in general use, though containers of bone and of baleen, with wooden bottoms were also used. The Old Bering Sea stage sees the appearance of a distinctive, fully formed, and elaborate type of curvilinear decoration containing a number of design elements unknown at other stages of the maritime culture with which we are concerned. The original social organization of primitive communal type begins to disintegrate at this stage. Separate houses appear, accompanied by individual family food storage pits.
>
> The area of distribution of the Old Bering Sea phase is limited. At the present time, we have knowledge of this phase on the coast of the Chukchi Peninsula from Cape Dezhnev in the north to Cape Bering in the south, as well as on the Punuk, St. Lawrence and Diomede Islands.
>
> At about the 3rd or 4th century of our era, connections between the north and south Bering Sea areas apparently cease. However, close contacts are established with northeastern Asia. . . . The Punuk cultural stage of the Bering Sea area begins. The mode of life at this stage continues on essentially the same basis as earlier. Houses become larger but follow the same plan. Whale bones, and especially skulls, are extensively used as building material, and this, together with the appearance of indisputable whaling harpoon heads, speaks for the fact that whale hunting peaks at this stage. In addition to whale, walrus, bearded seal, and ringed seal continue, as before, to be the principal animals hunted. Reindeer

> is still pursued on the mainland, small animals and a great variety of birds are hunted everywhere, and many kinds of fish are caught, particularly salmon in the lakes and cod and saffron cod ["tomcod"] at sea. Hunting and fishing gear remain essentially the same. . . . However, implements of chipped stone are almost entirely replaced by ground-stone tools, mainly of slate. While walrus ivory definitely predominates at the Old Bering Sea stage as material for bone objects, in Punuk, bone, and to some degree antler, gain favor again. Clay pots and lamps and baleen buckets without change. . . . Art changes radically and, like a number of implements, becomes simpler. On the other hand, many implements of Siberian origin make their appearance (Rudenko 1972:170–172).

Rudenko connects changes in the tools that existed earlier, the appearance of new tools, and a sharp change in art in the Punuk stage of Eskimo culture with the arrival in Northeast Asia, between 1 A.D. and 500 A.D., of a group of Chukchi-Koryak tribes, who had earlier adopted a deer-herding economy, and notes:

> With the resultant acquisition of mobility and opportunities for occupying the hitherto uninhabited portions of the Chukchi Peninsula. This would have led to close contacts with the coastal dwellers. Both peaceful and inimical contacts occurred. As a result of warlike encounters and, possibly, the shift of some of the wandering inhabitants of inland regions to a settled life on the sea coast in the second half of the first millennium of our era, the ancestors of the modern American Eskimos began moving east and spread over the entire arctic coast of America in the Thule period (Rudenko 1972:177).

Further movement of the Punuk culture "eastward as far as Greenland occurred only at the end of the first and beginning of the second millennia" (Rudenko 1972:179).

Rudenko notes that the Bering Sea Eskimo culture's last stage, which replaced Punuk, began in the seventeenth century. He described it as:

> characterized by the appearance of a relatively small number of new traits. Dog traction appears, and with it, dog sleds with flat bone runner shoes, swivels, and dog harness buckles. We also now get bone umiak keel plates, snow shoes, long unbarbed ivory arrow heads of triangular cross-section, fox traps and bone paddles for erasing tracks after setting them, harpoon end-blades of iron, two-handed scrapers for working hides —both of stone and of iron, figures of birds, mammals, and men, carved out of ivory, and beads (Rudenko 1972:172).

Thus, the above-enumerated described stages of development of the Bering Sea's early Eskimo culture show that in Northeast Asia there was a distinctive, rich, and original culture of sea-mammal hunters, with roots going back into deep antiquity. This culture's people developed independently from other tribes to attain the highest level of technological expertise possible in the Stone Age. Under Stone Age conditions, a very unusual art style developed. A complex sea-mammal hunting technique was created, which included specific tools and means of hunting (toggling harpoons, baidars, and so on). Okladnikov noted:

> It is especially remarkable that the creators of this culture were residents of the most severe and unattractive regions of the Old and New Worlds, being on the very brink of a world habitable by humans, in the realm of eternal ice, walruses, and polar bears (Okladnikov 1950:33).

Owing to the investigations of Soviet scholars of different but related disciplines, particularly archaeologists, historians, ethnographers, and linguists, the question of the Eskimo problem had already been largely solved. In recent years, physical anthropologists have turned their attention to questions connected with the Eskimo problem and have corroborated several ideas of earlier archaeologists, historians, and linguists. Thus, in 1951, on the basis of several physical anthropological investigations, G. F. Debets concluded that:

> when America's earliest inhabitants arrived from Asia through the Bering Sea region (probably then still the region of Beringian dry land), the Bering Sea type began to form in this region, the most characteristic representatives of which are the Asiatic Eskimos and Coastal Chukchi. This type is genetically most probably connected [not only] with the Pacific Ocean branch of the Mongoloid race but also with its ancient representatives . . . the morphological features of whom are preserved in East Asia at the present time only, perhaps, among the Kamskii Tibetan people.
>
> Judging by paleoanthropological data, this type preceded the Eneolithic Yanshao culture, which dates to the third millennium B.C. (Debets 1951:113)

The early cemeteries of Chukotka discovered in recent years provide new materials that illuminate the important stages of the ethnic history of the Bering Sea population over the last two millennia.[13]

M. G. Levin (1958b) made a large contribution to the study of ethnic anthropology of Far Eastern the peoples. He summarized multiyear studies in the Siberian peoples' physical anthropology in the monograph "Ethnic Anthropology and Problems of the Ethnogenesis of the Peoples of the Far East."

Levin devoted great attention to the ethnic history of the Siberian peoples, the investigation of the Ainu problem, the physical anthropology of the Japanese population, and the Eskimos' origins.

Studying data concerning Eskimo from early and late burials, Levin concluded that

> the physical type of the Eskimos, in spite of their very broad region of settlement, is characterized on the whole by significant unity. . . . The physical type characteristic for the Eskimos was evidently formed in the region of the Bering Sea. From there it passed along the Arctic coast of America to Greenland (Levin 1958b:237, 238).

Including the Eskimos in the Arctic race, Levin notes that:

> the physical types of the Arctic race were formed as a result of the early mixing of groups of north Asiatic and Pacific origin. . . . The region of formation of the Arctic race was Northeast Asia and the Bering Sea, territories where the processes of formation of northeastern Paleo-Asiatics and the Eskimos, respectively, occurred (Levin 1958b:247, 248).

Levin dismissed migrational concepts for the Eskimos' origin. However, he stressed that it was not possible:

> to deny the presence of historical connections between the early population of the Arctic regions of Asia and America during different stages of their history and more southern regions of northern and eastern Asia. . . . One cannot reject the possibility that not only cultural influences but also individual ethnic groups from outside penetrated the early Eskimo cultural region. But the recognition of such connections is not an adequate argument for the theory of the 'Eskimo wedge' (Levin 1958b:246).

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[13] This book is dedicated only to questions of the ethnic odontology of the early Bering Sea people. Problems of craniology will be examined in subsequent works.

Promoting the theory of an autochthonous origin for the Eskimo in the Bering Sea region, Levin proposed that the "formation of the Eskimos—their culture and language—was undoubtedly the result of long and complex processes that occurred in regions adjoining the Bering Sea" (Levin 1958b:246). He noted:

> In these processes, connections between the early population of the Bering Sea and the population of neighboring and more distant territories also apparently played no small role, but these connections did not violate the succession of culture (or, apparently, language) in the region of the Bering Sea, which should be viewed as the "homeland of the Eskimos (Levin 1958b:246).

Levin attached great significance to the study of the Eskimo problem and the questions of when and where the economic-cultural type of the Arctic sea-mammal hunters was formed. Therefore, the early Eskimo cemetery at Uelen, discovered in 1955 in Chukotka, and the new possibilities it presented for studying the archaeological and physical anthropological material, attracted his attention.

As a result of Levin's initiative and energy, the Institute of Ethnography organized the Chukotka Detachment of the Northern Expedition to excavate the Uelen cemetery. Levin personally directed the work there from 1957 through 1958. During this time, he collected material on the Chukchis' and Eskimos' blood groups and dermatoglyphics, which until then was completely lacking.

After the discovery of the even more promising and unusual Ekven cemetery, Levin coordinated the fieldwork and personally directed the excavations there.

Materials from these unique early Eskimo culture sites, Levin shows, required researchers adopt more precise classifications, periodization, and typology for these early cultures of the Bering Sea and raised new questions concerning the evolution of the economy of the Arctic sea-mammal hunters and their historical connections with the populations of other regions of Asia and America.

Materials from the Uelen and Ekven cemeteries confirmed Levin's conclusion that the dolichocephalic type originated in early antiquity. Cranial materials from the Uelen and Ekven cemeteries provided new and more decisive evidence for this position (Levin and Sergeev 1964:8). Arutiunov and his colleagues wrote:

> The substantial antiquity of the sharply dolichocranic type on the Asiatic coast of Bering Strait, established in the materials from the indicated cemeteries, is a new and quite essential argument supporting the fact that this type also preceded the mesocranic western type in the western part of the region of Eskimos settlement (Arutiunov et al., 1963:69).

Thus, physical anthropological data once more attests to an Asiatic origin for the present inhabitants of Chukotka, northwestern North America, and Greenland, and to the fact that Eskimo history has its roots in deep antiquity.

In the vast literature on the Eskimo problem, questions of Eskimo social organization are insufficiently illuminated. Therefore, L. A. Fainberg's 1964 monograph *Social Structure of the Eskimos and Aleuts from the Matriarchal Clan to Communal Society* was a great contribution to the study of social structure and the development of Eskimo society. And although "this work examines the social structure of the Eskimos only in some aspects, not setting multi-aspect analysis of this problem as the goal" (Fainberg 1964:8), the author raises several questions of a methodological character. Fainberg writes:

> In recent years, the Eskimo material has been widely used in anti-Marxist social works to reject not only the universality of the matriarchal clan but even clan organization in general, to strengthen the position of adherents of the monogamous family as the first and fundamental unit of human society. . . . Consequently, the

> question of whether or not the Eskimos had clans goes far beyond the framework of the Eskimo problem in its significance (Fainberg 1964:6, 7).

In his monograph, Fainberg presented large-scale criticisms of bourgeois researchers' contention of that the aboriginal population of America had a clanless past, and showed that:

> critical analysis of such views seems to us an important and immediate problem not only because at the bottom of all these concepts lie fundamentally incorrect theoretical views but also because these theories often underlie the neocolonialistic politics of American imperialism and oppression of small ethnic groups (Fainberg 1964:7).

Interesting materials are cited in the work on the history and culture of the Aleuts and Eskimos. Also, the character and forms of the exploitation of the Aleuts and Eskimos in the capitalist societies of the United States, Canada, and Greenland are analyzed. The author shows that "solving the problem of the early social structure of the Eskimos can only come from [relying on information about] their social organization in the nineteenth century, when it was described by Russian and foreign travelers and scholars" (Fainberg 1964:23).

Studying the history of the development of social organization of the Aleuts and Eskimos, Fainberg concluded that:

> the Eskimos were formed in Southwest Alaska. Until the Eskimos and Aleuts separated into two groups, the matriarchal clan existed among them.[14]
>
> Evidently, shortly before the Russians arrived on the islands, the matriarchal clan began to change into a patriarchal one among the Aleuts. As a result of colonization, the development of the patriarchal clan was interrupted. . . .
>
> The transition from maternal to paternal clan among the Eskimos of the Bering Sea, who fewer and later experienced the influence of colonization, had ended by the nineteenth century, and possibly even earlier. In addition, clan relations among them were closely intertwined with neighboring relations, at least in the nineteenth century.
>
> Among the Eskimos who pushed eastward and opened up the Canadian north and Greenland, the need to adapt to natural conditions less favorable than those found in the west hampered the development of productive forces. The dispersal of the population because of a scant food base, in combination with the continual movement of some small groups of Eskimos and the delocalization of some clans, led to the destruction of clan connections and, finally, to the destruction of matriclan organization.
>
> Arriving to replace the matriclan community was the "aboriginal neighborhood community," a more flexible form of social organization capable of changing and including foreign groups of people in its composition. The maternal clan was replaced among the migratory Eskimos not by the paternal clan but by the neighborhood community. This was evidently caused by delayed development in the productive forces during the course of resettlement, and the maternal clan

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[14] On the basis of available materials, Fainberg showed in 1955 in the articles "The Question of Clan Structure among the Eskimos" and "The Question of Clan Structure among the Aleuts" that a matriarchal clan existed in the past among all Eskimos and their relations the Aleuts (Fainberg 1955a, 1955b).

> was dissipated among these Eskimos when the economic preconditions for the formation of the paternal clan were not yet developed (Fainberg 1964:244–245).

One great service the author performed was to illustrate social structure of the Aleuts and Eskimos up to the twentieth century and the formulate the question how village society among these peoples was formed.

However, it is difficult to agree with some of Fainberg's conclusions, especially concerning the question of where the Eskimos, their culture, and their language were formed. The author, following C. Chard (1962) and W. Laughlin (1952), believes that southwest Alaska was the Eskimos' home, the place of their greatest concentration, and the center from which they migrated (Fainberg 1964:22). This hypothesis is based on the supposition that "the most probable origin of emergence of the type of maritime economy in the northern part of the Pacific Ocean is the region of Bristol Bay (Alaska). This region also possesses favorable conditions for man's adaption to the sea. From here, the economy of marine hunting could spread into more severe northern regions, where initial adaptation could hardly have taken place (Chard 1962:98).

There is no doubt that such a concept is insufficient proof that the center of formation of Eskimo culture was the Bristol Bay region. Chard himself writes in the conclusion of his article: "Further fieldwork will either corroborate our hypothesis or will give a more felicitous explanation of the observed facts" (Chard 1962:99).

Chard's supposition (1962:97) that early Okvik culture existed in Southwest Alaska is doubtful. This conclusion was based only on one bone tool, decorated in Okvik style, found in Chalitmiut. The formation of the Okvik culture, as we will show later, occurred in the Bering Strait region—on the shores of its islands.

Numerous field materials obtained through excavations of early Chukotka cemeteries attest to the fact that man's adaptation to life in the highest Arctic latitudes and the formation of the maritime hunting economy occurred in the Bering Strait and adjoining regions.

Chapter 2

Questions of Chronology and Correlation of Early Eskimo Cultures of the Bering Sea Region

Questions concerning the origin of the Eskimos and their material culture are still far from fully resolved. Meanwhile, the treatment of several other important issues of the early history of the peoples of the far north of the USSR is closely connected with them, as is the problem of the Eskimos' settlement of the American north.

Scholars approach in different ways the question of how to locate the Eskimos' homeland with their vestiges of early traditions of the microlithic technique, and questions of cultural borrowing and influences, which can be traced in early Eskimo material culture in the Bering Sea area.

All the main conclusions about these complex questions are based on early Eskimo cultural materials from the Bering Sea basin, from a time when early Eskimo culture, with all its local and chronological variants, was already completely formed and highly developed. The basic materials examined in our publication also belong to this time—the end of the first millennium B.C. and beginning of the first millennium A.D.

In this chronological stage, the central region of early Eskimo cultural diffusion is a vast area that includes substantial expanses on the islands and along the coast of the Bering Sea and Bering Strait, both on its Asian (western) and American (eastern) shores.

The generally accepted periodization of the early Eskimo cultures in the Bering Strait and Alaska regions of interest typically includes the following stages: Okvik, Old Bering Sea, Birnirk, and Punuk. The chronological correlation of some early Eskimo cultures and, even more so, their absolute dating, remains unclear. There is substantial disagreement among researchers of early Arctic cultures on these questions. Many researchers believe the Okvik culture was the first; for example, H. Larsen and F. Rainey (1948) favor greater antiquity for the Okvik culture. J. Giddings's report dates Okvik I to the third and second centuries B.C., and Okvik II-III to the first millennium B.C. and first millennium A.D. (1960). In recent years, work has appeared that relies on radiocarbon dating to age determine the dates of early Eskimo cultures. According to these data, the Okvik culture followed the Old Bering Sea culture, the latter occurring in the third century A.D., whereas the former existed in the fifth century A.D. (Rainey and Ralph 1959).

The following table appears in Larsen and Rainey's (1948:155) monograph:

Date	Southeast Alaska	Bering Strait	Northern Alaska
1900 AD	Modern cultures	Modern cultures	Modern cultures
1500 AD	Kachemak III	Modern & "protohistoric" cultures	Tigara
1000 AD	Kachemak II	Punuk	Western Thule
		Early Punuk	Birnirk
500 AD	Kachemak I	Old Bering Sea	
1 AD		Okvik	Near Ipiutak, Ipiutak

Giddings's (1960:123) report, dedicated to the archaeology of the Bering Sea, gave the following chronological correlation of early cultures and their absolute dates.

In an article published in 1959, Rainey and Ralph (1959:373) cite the following data for the American Arctic's cultural complexes:

Punuk	1000 AD
Birnirk	800 AD
Kachemak III	600 AD
Okvik	500 AD
Ipiutak	300 AD
Norton	300 BC
Dorcet	2000–700 BC
Kachemak I	700 BC
Choris	700 BC
First River (early mountain phase)	1300 BC
Sarkak	400–2000 BC
Denbigh Flint Complex	earlier than 2000 BC

One should not overestimate the precision of these dates but rather consider that the results of radiocarbon analysis can seriously diverge depending on the state of various sites' samples.[15]

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[15] This should especially be applied to objects of wood. Residents of the shores of Chukotka and the islands of Bering Strait filled requirements in wood in significant degree through driftwood carried into the sea by large rivers. This wood could have lain for a long time on the shore of the river until high water carried it to sea. Under the conditions of polar seas, which freeze over, the wood could drift for many years with ice fields before it struck the shore and was used by local residents.

Date	**Asia**	**America**	
		Bering Sea	Chukchi Sea
1900 AD 1700 AD	Modern & late prehistoric cultures	Modern cultures	Modern cultures
1500 AD		Nukliit III	Tigara
1300 AD 1100 AD	Thule-Punuk	Nukliit II	
900 AD	Punuk	Nukliit I	Western Thule
700 AD	Early Punuk		Birnirk
500 AD	Birnirk		
300 AD	Old Bering Sea III		
100 AD	Old Bering Sea II	Norton	Ipiutak & Near Ipiutak
	Okvik II-Old Bering Sea I		
100 BC 300 BC	Okvik I		Choris
500 BC 700 BC 900 BC 1100 BC 1300 BC 1500 BC			
1900 BC 2100 BC 2500 BC 2700 BC 2900 BC		Denbigh Flint Complex	Denbigh Flint Complex

All the above periodizations indicated the Okvik and Old Bering Sea cultures are adjacent. The question in this is, which culture preceded the other?

Until radiocarbon analysis arrived, the basic criterion for classification and periodization of early Eskimo cultures was the typology of the structural features of the harpoon complex's elements, particularly toggling harpoon heads. Based on this typology, the Bering Sea culture; the cultures of Okvik, Birnirk, and Punuk; and the close-to-modern "proto-historic" culture, which belongs to the seventeenth to nineteenth centuries, can be clearly distinguished throughout the Bering Sea region.

Unfortunately, we do not know enough about the Okvik culture, because there are few published materials on Okvik sites. But even from what we do know, it is clear that one can hardly suggest that the Old Bering Sea culture developed directly from the Okvik culture or vice versa.

Rainey (1941) described the Okvik site, which the Eskimos of St. Lawrence Island had discovered on one of the Punuk Islands. Characterizing work carried out in this region, S. I. Rudenko writes:

> A substantial collection from the site was acquired by Geist in 1931 and 1934, and by Rainey in 1937. In the same year, Collins's monograph on the archaeology of St. Lawrence Island appeared, and Rainey noted the fact that the style of ornamentation typical of most objects from the Okvik site was identical to that found by Collins on objects from the oldest layer of the Old Bering Sea culture on St. Lawrence, and which he described as Old Bering Sea style 1.
>
> In 1939, Rainey visited St. Lawrence Island with the objective of spending some time in the Punuk Islands and investigating the Okvik site but did not find it possible to do so. However, in the autumn of the same year, his companion Giddings discovered the remains of a dwelling of a culture apparently identical to that of Okvik near Gambell on St. Lawrence Island. . . . Unfortunately, the collection of objects obtained from that dwelling is still unpublished, and the material that Rainey used to describe the Okvik culture consists almost entirely of objects obtained from Eskimos. Okvik differs from other Eskimo cultures primarily in its having a special style of ornamentation, which is simpler and sketchier than the curvilinear Old Bering Sea style, and in its having a distinctive type of harpoon head with a complex spur. A whole series of objects typical of Punuk, but unknown in the Old Bering Sea, culture were found at the Okvik site. These include whaling harpoon heads, a number of arrowhead types, salmon spear prongs, shoe-shaped adze heads of walrus ivory, and others. Rainey presumes that the absence of these objects in the intermediate Old Bering Sea stage is fortuitous." (Rudenko 1972:13, 14).

Speaking of the style of decoration—simple and schematic, characteristic of the Okvik culture—there was a tendency toward a simplified rather than ornate decorative style. This tendency can be traced in the transition from the Old Bering Sea culture to the Punuk, and from the Punuk, in turn, to prehistoric and modern culture. In our view, the "simpler" so-called Okvik style is not an entirely convincing argument supporting the Okvik culture's being older than the Old Bering Sea culture, which occupied much more territory than did the Okvik culture. The Okvik culture is possibly a local variant of the Old Bering Sea culture or coexisted with it for a long period. The Okvik culture in its "purest" form is characteristic of the islands of the Bering Strait. On the shore of the Chukchi Peninsula, judging by materials from the Uelen and Ekven cemeteries, the Okvik culture is intertwined with the Old Bering Sea culture in several cases but does not precede it.

Archaeological and physical anthropological materials indicate that the coast of the Bering Sea should be viewed as the "homeland of the Eskimos," where the formation of their culture occurred.

The whole economic way of life of the early Eskimos attests to the fact that the basis of Eskimo society's existence was sea-mammal hunting.

Sea-mammal hunting also determined the location of Eskimo villages: they are all located along the route of movement of sea mammals, on spits protruding into the sea or on the slopes of rocky capes. Many Eskimo villages have thousands of years of history. Objects of the Old Bering Sea, Okvik, Birnirk, and Punuk cultures are often found in the cultural layer of cutbanks along the shore.

We believe that the idea the Eskimos' ancestors arrived in the extreme Northeast from Asia and later settled along the shores of the Bering Sea and Bering Strait, then in Canada and Greenland, is correct.

The Eskimos were one of the last waves of people to move from Asia to America. The American continent's settlement by Indian tribes occurred substantially earlier, evidently in the Mesolithic period. It is possible that some waves of migrants from Asia arrived still earlier—at the end of the Upper Paleolithic.

Archaeologists have found various ages' shell middens remain from kitchens on the Pacific's Asian and North American shores. On the Asian shore, shell middens extend to the northern region of the Sea of Okhotsk, and these kitchens are dated later than the American shell middens.

However, it is most probable that the Okhotsk coast shell middens belong to that period when the last ethnic groups were crossing the isthmus of Beringia, moving northeastward, and settling in America.

The Eskimos, who arrived significantly later, on the coast of the Bering Sea, were undoubtedly unable to exist in the severe Arctic conditions by collecting mollusks; moreover, a large distribution of edible mollusks was not characteristic for this northern Pacific region.

The Eskimos arrived in extreme Northeast Asia substantially after the Bering Strait was formed. On the Bering Sea and Bering Strait coasts, the Eskimos' ancestors encountered the richest walrus haulouts. It was while hunting at haulouts that maritime hunting was developed and perfected, and the toggling harpoon subsequently became the primary tool for this.

It is interesting to note that among the Aleuts, who settled substantially to the south of the Eskimos, toggling harpoon heads were not widely used. Thus, in the richest ethnographic collection of objects of the Aleuts' culture and daily life, which are dated to the end of the eighteenth and beginning of the nineteenth centuries and were described by R. G. Lyapunova (1963), there are 105 non-toggling harpoons preserved among the tools for hunting sea mammals. There is only one completely preserved toggling harpoon. Although this collection belongs to a comparatively recent time—when hunters pursued seals for their valuable fur—it can nevertheless be supposed that toggling harpoons were not widely used among the Aleuts. Inquiring into this question, Lyapunova notes:

> G. I. Sarychev, I. G. Voznesenskii, and I. Veniaminov do not mention toggling harpoons among the Aleuts; in the Museum of Anthropology and Ethnography (MAE) collection, there is only one such harpoon and two heads with foreshafts. W. I. Jochelson writes of toggling harpoons he found during excavations. It is possible that this form of harpoon disappeared from the Aleutian Islands in the nineteenth century. With the arrival of Russian *promyshlenniki*, and especially with the organization of the Russian-American Company, the Aleuts directed their attention primarily toward procuring valuable animals fur: sea otters and fur seals, in hunting which only light, non-toggling harpoons were used (Lyapunova 1963:154).
>
> Concerning sea-lion hunting, the traditional method was the drive. Lyapunova wrote: The animals, having been driven from the shore, were struck over the nose with clubs and speared. They tried to approach walruses lying on the shore from the sea side and spear those closest to the water; their carcasses shut off the way to the sea for the other animals, which are very awkward on land (Lyapunova 1963:151).

The development of sea-mammal hunting among a once-unified ethnic group of Aleuts and Eskimos took different routes. The Aleuts completely mastered the light, non-toggling harpoon and dart, which hunters threw with the aid of a throwing board. The presence of sea-mammal haulouts permitted the Aleuts to hunt on shore. The sea around the Aleutian Islands never freezes, and snow falls only rarely. For the Eskimos, who hunt on the ice, the toggling harpoon was necessary since a non-harpooned walrus almost always goes under the ice and sinks.

The Eskimos' whale-hunting technique also differed from that of the Aleuts. The Aleuts threw a light spear with a poison-covered slate head at the whale. The Eskimos mastered whale hunting, having somewhat altered the tools intended for hunting walruses in the water.

There is no question that, among both the Aleuts and the Eskimos, hunting walruses at the haulouts goes back to very distant times when this single ethnic group first encountered pinniped haulouts on Northeast Asia's shores, from where the movement of the Eskimo-Aleut tribes began.

The beginning of sea-mammal hunting also belongs to this time. Sea-mammal hunting first began to develop in the fall, on the shore at haulouts, and then in spring and beginning of summer, on the ice. Hunting on the shore at haulouts and on the ice did not require a complicated harpoon complex. Walruses were speared with a lance. With the gradual transition to hunting walruses in open water and on the ice, hunters began to develop, then perfect, use of the toggling harpoon. Toggling harpoon heads, intended for hunting walruses, are known in the Old Bering Sea-Okvik times. Also, harpoon heads with a closed socket and an end-blade appear along with heads with an open socket for a foreshaft, and two line holes. A complex asymmetrical spur, characteristic of so-called Okvik-type toggling harpoon appears to be an improved structural variant of the toggling harpoon within the framework of the long Old Bering Sea period. The distribution of Okvik-type toggling harpoon heads can be traced specifically to the island region of the Bering Strait and Bering Sea—exactly where most of the water is ice-free for the longest time. It is natural that, in this region, baidars and kayaks were used to hunt sea mammals.

On the Chukotka coast, most of the walruses were procured at haulouts. The fall slaughter at haulouts provided the Eskimos with walrus meat for a long time. The locals' primary food was walrus meat sewn up in a skin in the form of a sausage.[16] These pieces of walrus carcass, which weighed 30 to 60 kilos (65 to 130 lbs) were preserved in cache pits (meat pits) and provided the Eskimos with food for the whole winter.

Sometimes walrus was hunted in winter, as ethnographic materials confirm. The hunt occurred in the polynyas [openings in the ice] and air holes in the ice.

The economic significance of hunting walrus in the Bering Sea region is difficult to overestimate since it provided the local population with its basic food. As a result of many centuries of experience, the Eskimos learned to use products from the walrus hunt for food, in a variety of both fresh and soured preparations. The walrus supplied skin from which the baidar cover and a variety of straps were made. Walrus tusk was an excellent raw material.

A substantial number of toggling harpoon heads from the Uelen cemetery can be classified as intended for hunting walrus. Among these harpoons, there are heads of typical Old Bering Sea appearance with Old Bering Sea decoration and two line holes, described by H. Collins (1937) as type Ix and Iy. Also represented are Old Bering Sea harpoons with closed a socket. There are Okvik-type heads similar to those from the Okvik site Rainey described. This similarity is clearly manifested both in the form of the head and in decoration.

Thus, comparing toggling harpoon heads assigned to the Okvik or Old Bering Sea cultures does not allow one to ascertain their greater or lesser antiquity.

It is possible that for the Chukotka coast in the Uelen region, which is covered by ice longer, Old Bering Sea-type heads were better for hunting walrus. For the island region, where the sea is ice-free substantially longer than the sea in the region of the mainland coastal region, heads of the Okvik-type heads, with a single hole for the line, were more favorable. One must consider that the Bering Sea-type harpoon, which had two line holes, had to be thrust deeply into the animal's body to not only pierce the skin and fatty cover, but also deeply penetrate the tissue. At that point, the harpoon, freed from the girdle of the socket and foreshaft, was turned by the strain of the line and held by the symmetrical spur, and became perpendicular to the entry hole. Based on informants' reports, to deliver a blow with an Old Bering Sea-type harpoon required great muscular strength. This explains the presence of massive harpoon shaft heads and long harpoon foreshafts in graves at the Uelen cemetery. Harpoon rests are encountered everywhere. All this supports the fact that Old Bering Sea harpoons with an open socket were thrown from short distances or forced into the body of the animal directly with two hands, the harpoon not being thrown, but, like a spear, thrust into the walrus's body. A hunter creeping from behind hummocks or waiting at a polynya or air hole in winter would find this method of harpooning a walrus most effective. Okvik-type harpoons were most probably thrown from a greater distance. The complex asymmetrical spur restrained the wounded animal even if the harpoon stopped directly under the skin or in the fatty layer. Many heads from Okvik sites, published by Rainey, can be classified as most likely heads for seal hunting, as evidenced by their small size (Rainey 1941:481, Fig. 6:1-8, 10).

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[16] In the Naukan dialect of the Eskimo language the walrus meat sewn up in a skin is called *tukhtak'*, in Chukchi it is *kopal'gen*.

The heads of lightweight harpoon shafts were, Rainey writes, "undoubtedly used with seal or walrus harpoons" (Rainey 1941:488). Judging by the published illustrations of harpoon shaft heads (Rainey 1941:488, Fig. 10), they were all intended for a lightweight harpoon shaft that was thrown from a substantial distance.

The materials cited above do not corroborate the fact that the Okvik period preceded the Bering Sea period, and what is more, they incline one to conclude just the opposite. It should be noted that the idea Rainey expressed—that Okvik came before the Old Bering Sea culture—was developed in S. I. Rudenko's monograph on material he obtained on his Chukotka expedition in 1945 and on the collections N. P. Borisov and D. E. Bettak gathered on the Chukchi Peninsula in 1910.

However, none of this material—by stratigraphy, by the data of precise science, or in itself—provides a basis for such an early date for the Okvik culture.

Rudenko's conclusions about the southern connections of the early Bering Sea population in art, the use of iron, and several other conditions pertaining to Old Bering Sea and Punuk times, have not lost their significance, even now. However, Rudenko's proposed periodization of the Okvik culture raises serious doubts. For Chukotka, specifically the village at Uelen, Rudenko provided a new name—the Uelen Okvik culture.

In summer 1945, Rudenko examined the Chukchi Peninsula coast from the village of Uelen in the north to Sireniki in the south. Materials of the first special archaeological expedition in Chukotka were published in his book (Rudenko 1972). Speaking of the early settlement at Uelen, Rudenko notes:

> It was found to be located relatively high, southeast of the modern village, on the eastern margin of the lagoon. There, on the slope of a hill rising from the lagoon, a substantial area had been dug over, though not continuously, but in isolated sections separated by undisturbed areas. At three points, we uncovered a cultural deposit over a total area of about 10 sq. m. in areas which had not been dug over and which were covered with a thin layer of sod. It was found that the cultural deposit here was not thick, measuring 0.4 to 0.6 m. in depth, though it contained numerous objects of bone and stone. . . . No evidence was discovered of houses, either subterranean or semi-subterranean, in the described area, nor were there any indications of meat-storage pits (Rudenko 1972:23).

And in the general conclusions to his work, Rudenko observes:

> Despite the exploratory nature of our investigations on the Chukchi Peninsula, we were able to establish the presence there of all the developmental stages of the culture that we call Eskimo, stages which had been formulated in the researches of American and Danish scientists working on the islands of the northern Bering Sea region as well as on the arctic coast of Alaska. At the same time, the material we have gathered allows, if not the solution, at least the illumination

> of a number of still controversial problems relating to the history of the population of America and the origin of this remarkable culture of sea-mammal hunters.
>
> The oldest known cultural stage of the Bering Sea area is the Uwelen-Okvik. The binomial designation of this phase is due to the fact that its features were first identified at the Okvik site in the Punuk Islands, though it is represented in purer form and more completely in our materials from the ancient site of Uwelen (Rudenko 1972:169).

Rudenko dates the Uelen Okvik stage of Eskimo culture, writing:

> The early phase dates from the end of the second and the beginning of the first millennium B.C., and is coeval with the end of the Neolithic and the beginning of Bronze in the Lena River valley. The second phase may be supposed to date from the second half of the first millennium B.C. (Rudenko 1972:170).

In 1955, the early Eskimo Uelen cemetery was discovered at Uelen near Tumannaya Station, at an elevation of 30-35 meters above sea level (Sergeev 1959). The cemetery is 120 meters south-southeast of Tumannaya Station, 230 meters east-northeast of the mouth of a stream, and 300 meters from the Uelen site. From 1957 to 1960 the Chukotka Detachment of the Northern Expedition of the Institute of Ethnography, Academy of Sciences, USSR, conducted work at the cemetery under the leadership of Professor M. G. Levin.

Levin, speaking about the Detachment's work in 1957, writes:

> Along with our work in the Uelen cemetery, small excavations were conducted at the Uelen site, found in 1945 by S. I. Rudenko, who, based on the small amount of material collected here, noted its similarity with the Okvik culture and distinguished a special stage of early Eskimo culture—the Uelen Okvik. . . . If we did not encounter permafrost in the cemetery with its stony ground, then we hit it at the site. The excavation was made deeper with the thawing, but we did not reach bedrock. The cultural layer here is thick and covers a very large area. . . . Earth removal in one of the areas of the site revealed the remains of an early house. Its excavation has to be included in the plans of later work (Levin 1958:133).

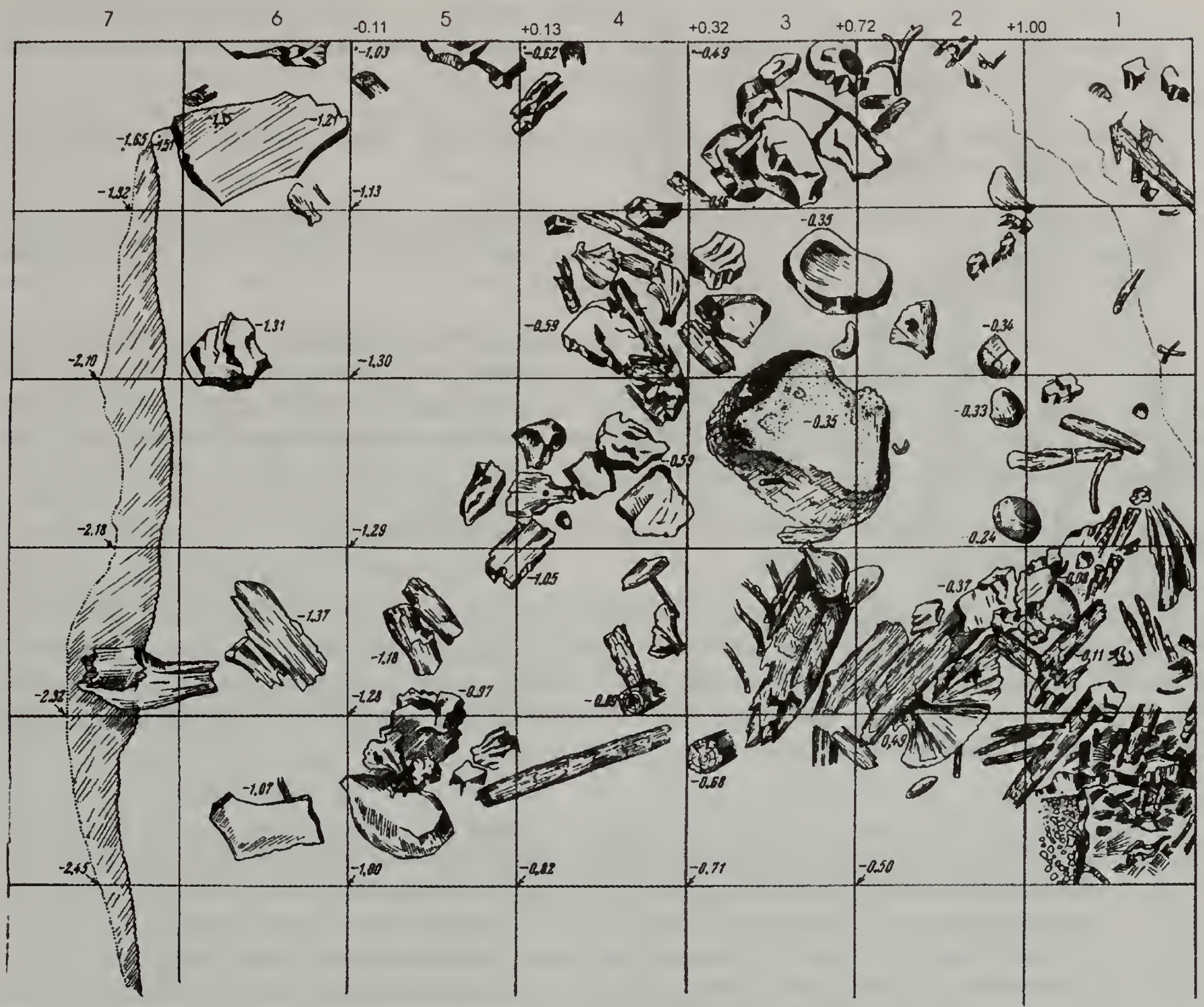


Figure 1. The Uelen site (plan view).

In 1958, excavation of this house was carried out over in area of 35 square meters that had been laid out in 1957 (Fig. 1). Here, in various places, stones, the remains of wood from vertically set posts, and several whalebones were found. Quadrant C-2 contained a clearly distinguishable hearth: the stones were very burned and there was much ash between them. In quadrant BC-4-5, at the edge of neighboring quadrants, was a large horizontal stone slab. In quadrant E-2-5, upon removing the earth (to a depth of one spade) below the sod, was a thick layer (0.15 m) of decomposed animal skin (possibly the roof of this house).

In 1958, the excavation beside the house was expanded, and the trench there was deepened. The excavations showed that over no less than 15 meters there is a continuous cultural layer more than 1.7 meters thick. The permafrost never permitted excavators' taking the trench down to the sterile layer.

Comparing Rudenko's data from excavations in 1945 and Levin's data, which were derived from excavations conducted in the very same area of the Uelen site, one can clearly see:

1. In the three trenches excavated by Rudenko, an area of about 10 square meters was opened to a depth of 40 to 60 centimeters. The excavations of 1957–1958 opened a continuous area of over 60 square meters (in an area of 42 square meters to a depth of 70 centimeters and in an area of

20 square meters to a depth of 20 centimeters). In addition, as already noted, a drainage trench more than 15 meters long was excavated to a depth of 1.7 meters. The depth of the cultural layer in several places in the trench exceeded 1.7 meters.

2. The materials of 1945 did not reveal signs of a house at the Uelen site. However, work in 1957 did reveal a house here.
3. The toggling harpoon heads found in 1945 served as a basis for confirming that the Uelen site can be assigned to early Okvik times, whereas materials from the 1957–1958 excavations do not provide a sufficient basis for such a conclusion.

If one accepts Rudenko's assertion that his excavations were conducted in an undisturbed area (Rudenko 1972:23), and if the harpoons found in 1945 at a depth to 0.6 meters (dated to the Uelen Okvik stage) can actually be chronologically assigned to the end of the second millennium B.C., then that culture found at a depth of 1.7 meters from the surface, that is, 1.1 meters deeper than the Uelen Okvik objects found by Rudenko, would be extremely interesting.

However, objects found at the level of 1.7 meters are not distinguishable from objects found under the sod layer at 40–60 centimeters depth.

Preliminary analysis of the elements of the Uelen site's inventory do not support its antiquity. In the sod layer, a walrus skin was found that served as the roof of a house. This discovery gives the impression that this is a house of Chukchi appearance and can be chronologically assigned to the time of settlement by the Chukchi of Uelen village, that is, the fifteenth to seventeenth centuries A.D., the transition period from a prehistoric culture to a modern one.

Vdovin notes:

> Today [Uelen is] purely a Chukchi village; at the end of the eighteenth century Uelen was partially Eskimo, partially Chukchi. Two languages were spoken in this settlement—Chukchi and Eskimo. This is convincingly attested to by K. Merck's records of words of Chukchi and Eskimo dialects made at Uelen village at the end of the eighteenth century. He called the Eskimo language that part of the residents of this village (undoubtedly Eskimos) spoke at that time the Uelen dialect. At the same time, Chukchi also lived in Uelen. He called them Reindeer Chukchi in contrast to the Eskimos, whom Merck called "Settled or Sitting Chukchi" (Vdovin 1961:52).

It should be noted that objects of material culture, in particular Old Bering Sea-Okvik toggling harpoon heads, from the Uelen cemetery, which is located 300 meters from the Uelen site, at present have no parallels with harpoon heads found at the Uelen site (Fig. 2).

The correlation of the Okvik and Uelen Okvik cultures represented in the Uelen cemetery and site certainly require additional investigation. Even if one agrees with the fact that the toggling harpoon heads, Rudenko published (1972:Pl. 1), are similar to Okvik harpoon heads—not only in type but also in decorative details—this similarity is nevertheless superficial, and the chronological break between the Okvik materials Rainey published and those at the Uelen site is beyond question. In our view, Rudenko is closer to correct when he writes: "[T]he most numerous group of harpoon heads from the ancient Eskimo site on the hill slope at Uwelen has relatively close analogies among harpoon heads of the Birnirk type" (Rudenko 1972:27).

Comparing the materials from individual burials of the Uelen cemetery of Old Bering Sea-Okvik and Birnirk times, we see a sharp difference in the toggling harpoon heads' structural features. There is not a single case in which heads of purely Old Bering Sea appearance (type Ix or Iy, according to Collins) were found with Birnirk-type heads in the inventory of the same burial. Okvik-type heads were found with heads of the Birnirk type in the inventory of one burial. This was Burial 17 from Levin's excavations in 1957. Here there was a toggling harpoon head of classic Birnirk appearance (Fig. 26:28) with a head from Okvik times (Fig. 26:27). In our view, this clearly confirms that Okvik-type toggling harpoon heads were used simultaneously in the same period as heads of the Birnirk type.

Consequently, Okvik culture, and not Old Bering Sea culture, comes directly into contact with Birnirk culture. Thus, Rainey and Ralph's periodization, cited above, which was based on radiocarbon analysis, is corroborated by archaeological materials from the Uelen cemetery, the analysis of which attests to the fact that the Old Bering Sea culture preceded the Okvik culture.

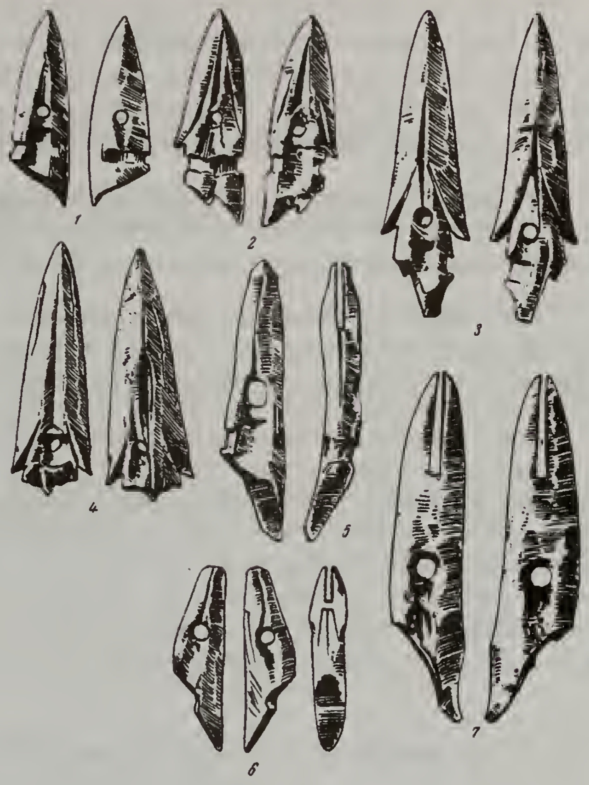


Figure 2. Toggling harpoon heads from the Uelen site (3/5 natural size): 1—found during excavation of trench; 2—found in northern part of trench at a depth of 1.5 m; 3—found in southern part of trench at a depth of 0.6 m; 4 and 5—found in southern part of trench at a depth of 0.7 m; 6—found in Quad B-6 on house floor at a depth of 0.3 m; 7—found in Quad A-1 on house floor at a depth of 0.5 m.

In the Uelen cemetery, individual burials that are assigned to the Birnirk and Punuk cultures were discovered. Unlike the Old Bering Sea, Okvik, and Uelen Okvik cultures' dates, these burials' dates are not doubted. The Birnirk culture came after the Old Bering Sea-Okvik stage, and Punuk culture was later than Birnirk culture. As is well known, the radiocarbon method analysis dates the Birnirk stage to the eighth century and the Punuk to the tenth century. The burials, being dated by these late cultures, in the Uelen cemetery are isolated—entirely different in appearance from most of the burials. Most of the burials in the cemetery, which is evidently a large tribal burial ground of Old Bering Sea-Okvik time, resemble one another. It is possible that the burials of the Punuk culture are in a burial ground that is two kilometers from the village where the stream enters the Uelen Lagoon, in the vicinity of an animal farm. This burial ground has been severely eroded by a stream.

Regarding Birnirk culture, it should be stressed that the number of Birnirk burials found in the Uelen cemetery is insignificant. It is interesting to note that in Chukotka, Birnirk-type toggling harpoon heads have been discovered on Cape Baranov, in the Uelen cemetery, and in more southern regions of the Chukchi Peninsula. As a rule, Birnirk-type harpoon heads are small and intended for hunting seals only. A limited number of toggling harpoon heads of this type has been found, and the Birnirk culture evidently was not widespread in the Bering Sea and Bering Strait region, as evidenced by the fact that the primary Old Bering Sea hunting objects found in this region have been from walruses and whales; seal hunting was much different and was done in winter at holes in the ice, and in summer from a kayak.

Summing up what has been said about the correlation between the Old Bering Sea and Okvik cultures, it should be noted that one cannot suggest that the Old Bering Sea culture developed from the Okvik culture.

Analysis of the inventory from early Chukotka cemeteries, especially the toggling harpoon heads from the Uelen cemetery, attests to the fact that the Old Bering Sea culture precedes the Okvik. In its early stages, the Old Bering Sea culture was one whole. With the spread and final migration of the Eskimo tribes along both sides of the Bering Sea coast and along the Bering Strait, local changes to the Old Bering Sea material culture began to surface.

The specific character of sea-mammal hunting, which depended on climatic conditions, the presence or absence of walrus rookeries and haulouts on the ice, and whether there were many or few of this or that sea mammal determined the economic life of the Eskimos and their relatives the Aleuts.

These variables determined changes in the forms of the toggling harpoon head—the chief and primary tool of sea-mammal hunting—the tool that made it possible to hunt year round. This tool permitted the Eskimos to later occupy vast expanses from Chukotka to Greenland.

We examine the development and perfection of the toggling harpoon head in more detail in Chapter 4, when we discuss the materials found in the Uelen cemetery, and there elucidate questions concerning the harpoon complex of sea-mammal hunting equipment and its assigned dates.

Chapter 3

Uelen Cemetery General Characteristics

The ancient Uelen Eskimo cemetery lies on the coast of the Chukchi Sea, only 170 meters from the present village of Uelen.

In some places, parts of the masonry surfaced, but the cemetery remained unknown for a long time, not only to the experts who visited Uelen but also to the villagers. The villagers used to dig some areas of the hills to the southwest of the cemetery looking for old walrus ivory to make tools and other objects. S. I. Rudenko excavated at the same place, but neither group touched the cemetery boundaries. Not until 1955, and only by chance, did a trench cut into two burials during excavations. The villagers gave the objects found therein to the local school teacher (D. A. Sergeev). Sergeev's group found other objects during the clearing of the damaged burials.

In 1957, an expedition from the Institute of Ethnography, Academy of Sciences, USSR, led by M. G. Levin, was organized to continue the research work in the Uelen area.

N. N. Dikov, the director of the Chukotka Regional Museum, excavated a small part of the cemetery in 1956 and returned to excavate more in 1958. The material he found was not examined thoroughly and does not differ much from what had been found in the main part of the Uelen cemetery.

This book describes excavations of the Chukotka group made by the Northern Expedition of the Ethnographic Institute, Academy of Sciences, USSR. There are several other publications onthis topic as well. The modern village of Uelen lies on a narrow (100–150 meters) shingle spit that runs east to west and separates Uelen Lagoon from the Chukchi Sea. In the east, the spit touches the coast. The coast is a gently sloping plateau, which joins the slopes of Uelennei Mountain farther to the east. Toward the sea, the plateau stops suddenly in cliffs. Under the cliffs is a narrow shingle beach that stretches farther east. According to informants, that beach was a walrus breeding ground in the nineteenth century. The plateau gently slopes down toward the lagoon.

The cemetery is 30–35 meters above sea level at the very edge of the plateau, and the eastern part is level with the plateau surface. The western portion comes down the slope, and the central portion rises above the slope in a 1.5-meter-high hillock.

To the south-southeast, 300 meters from the cemetery, are the excavation of the Uelen settlement and pits by S. I. Rudenko dug in 1945.

Two kilometers farther south, near the mouth of the Enmytagenveem River, which flows into the lagoon, there is a cemetery dating back to the seventeenth or eighteenth century that greatly resembles the cemeteries of the Coastal Chukchi.

The Uelen cemetery was completely excavated between 1957 and 1960. The same expedition excavated a small part of the Uelen settlement, where they found the remains of a dwelling. All the materials went to the Museum of Anthropology and Ethnography in Leningrad.

The shape of the cemetery is somewhat elliptical, 50 meters long and 20 meters wide, stretching from west-southwest to east-northeast (Fig. 3).

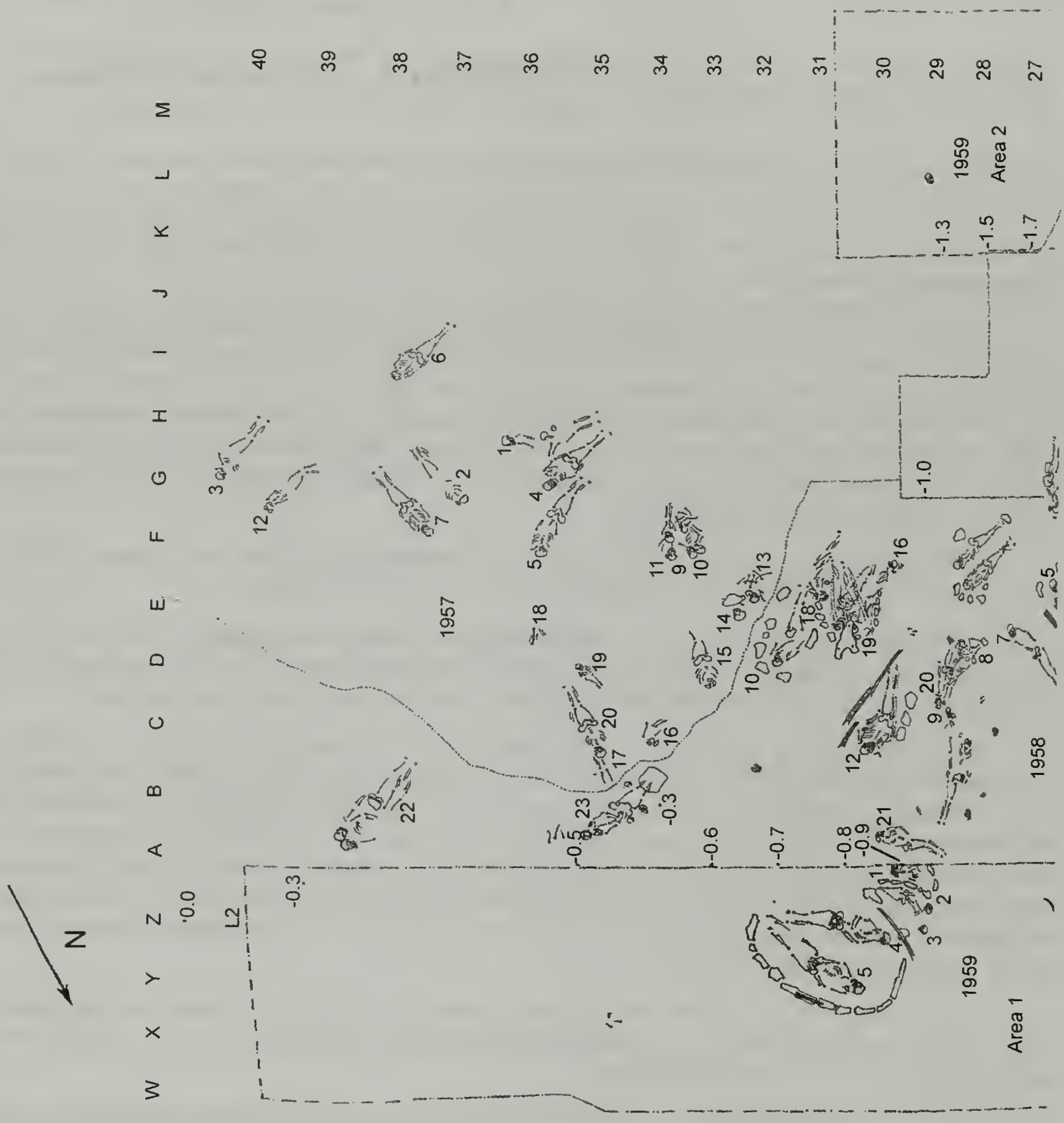
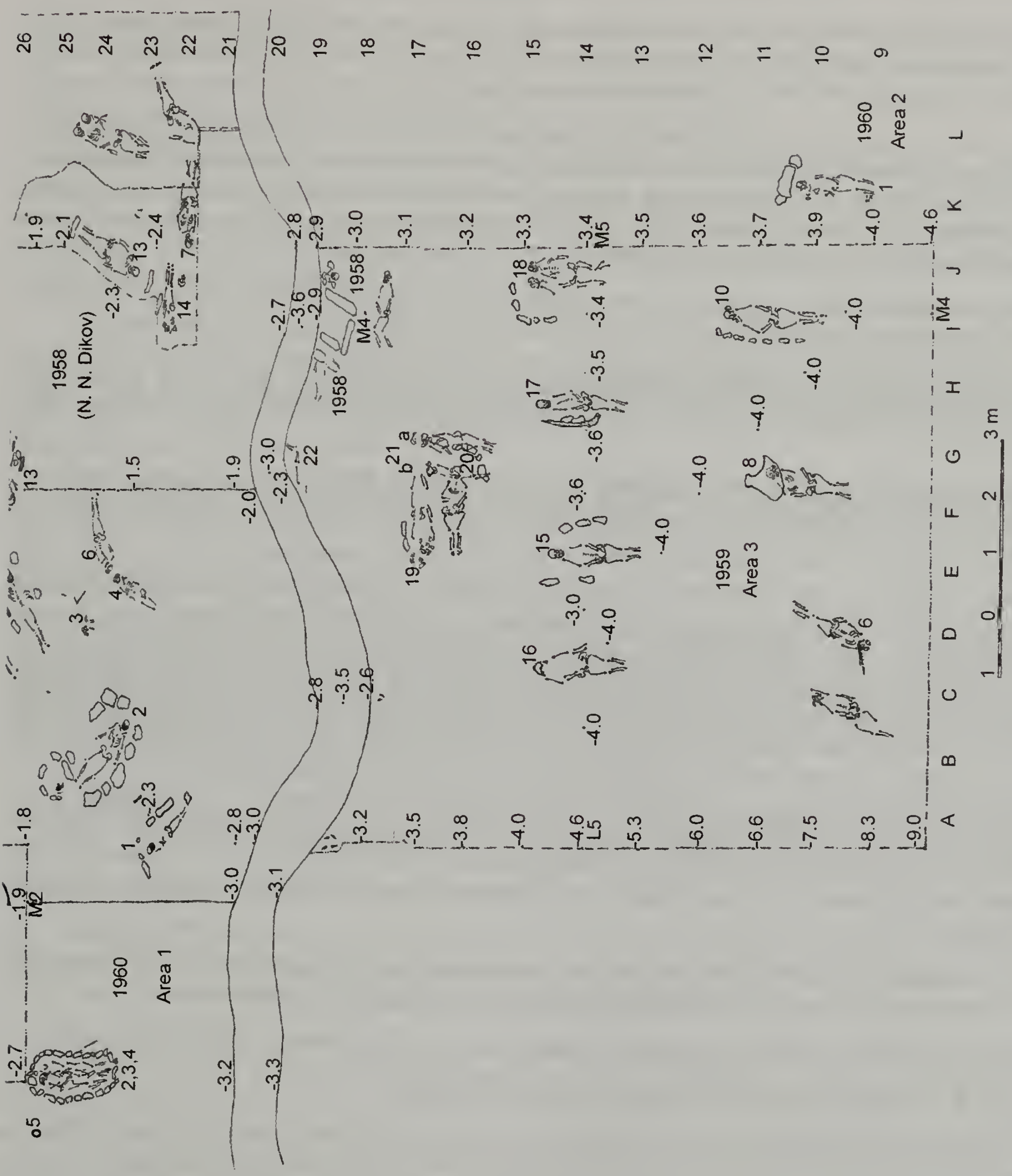


Figure 3. Schematic plan of cemetery.


1960
Area 1
1958
(N. N. Dikov)
1958
1958
1959
Area 3
1960
Area 2
A
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C
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3 m

During the excavations, the cemetery was divided into one-square-meter quadrants. These were numbered 1 to 55, from west to east. The letters of the square markers that were placed north to south: Q, R, S, T, U, V, W, X, Y, Z, A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P.[17]

The Chukotka expedition excavated 76 burials and uncovered more than 500 square meters of surface. The burials lie on different levels: some of them directly under the sod layer, others five feet below the surface. Even the deepest burials are above the permafrost.

Only a few burials could be seen from the surface because masonry or other features hid the others. The majority of the burials are simple pits, sometimes edged with stones or bones at the foot and head. Some of the burials have rather complicated constructions, with side masonry or bone walls and sometimes even floors and bedding. A general description of the construction elements and the most common implements found in them are given in the tables.

Burial orientation differs, but most of the burials are oriented to the north, northeast, and east, as seen on the general cemetery plan (Fig. 3).

We should especially note double, multilayered, and inserted burials. In these cases, we are rather certain of their chronological sequence. One can clearly see the layers of Burial 2(60), 3(60), and 4(60) (Figs. 18, 19).

Double Burial 21A and B(59) is partially covered by Burial 20(59), which therefore obviously came later (Figs. 3, 16). Burial 19(59) is undoubtedly even newer; it lies close to the latter but is 0.5 meters higher.

Burials 18(59) (Fig. 16), 11(59) (Fig. 14), 14 –15(58) (Fig. 7), and 12(58) (Fig. 6) are double burials. Burial 20(58) lies near a child's skeleton, but the simultaneousness of their burials is clear. Besides this, it is obvious that Burial 20(58), being an inserted burial, damaged the other burial that lies 0.10 meters lower. The only objects left from the latter are a few bones, and the inventory was not differentiated stratigraphically (Fig. 8). Burial 8(58) (Fig. 5) is 0.30 meters higher and is more recent than Burial 20(58). We can say the same about Burial 9(58), which, although it does not cover Burial 20(58), is very close and at a higher level and therefore cannot have been an earlier or simultaneous burial.

Burial 16–7(58) is a double burial (Fig. 7), and we can assume the burials were made simultaneously. Burial 16–17(58) covers Burial 19(58), which lies 0.60 meters lower (Figs. 3, 8).

Burial 4–5(59) (Figs. 11, 12) is a double burial that was apparently simultaneous, just like Burial 22(58) (Fig. 9).

The remains in Burial 17(57) had damage to the torso (caused by Burial 23(58)), and to the feet (caused by Burial 20(57)) (Fig. 3). Both of those burials were inserted after Burial 17(57).

Burial 4(57) nearly covered Burial 5(57), which lies on the lower level and is older (Fig. 3).

Burial 8–11(57) are group burials united by common masonry.

Information on the cemeteries the Chukchi research group excavated in the Uelen cemetery area is given below. We should note that D. A. Sergeev excavated only two of the burials in 1955. These had been found by local residents and damaged by their digging. In 1957, M. G. Levin excavated and published photographs of 20 burials. After 1958 there were regular and systematic excavations, which were completed in 1960.

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[17] Please find the Russian-Roman alphabet correspondences after the Abbreviations at the end of the Reference section.—*Trans.*

This book includes tables giving the basic qualitative and quantitative characteristics of each burial, brief textual morphological descriptions of the burials, and detailed figures of some burial sites, based on the materials obtained in between 1958 and 1960.

Burial 1(55): Judging by the leg's position, the head was at the western end. The earthworks smashed the person's pelvis, chest, and skull. While in digging around the head, excavators found four pieces of ochre, a plug, four arrowheads of walrus tusk, a harpoon socket piece, two heads for toggling harpoons, and a fragment of an ornamented plate made of walrus tusk.

Burial 2(55): This grave was also in ruins. Only leg bones remained. During the excavations, many grave goods were found, including two toggling harpoon heads, zoomorphic sculptures, tines of a bird spear, a handle and a fragment of an ulu blade, a trough scraper, a wooden anthropomorphic figurine, a stone arrow point, a pottery fragment, and a number of small carved walrus-tusk articles. A report about this excavation was presented earlier (D. Sergeev).

Burial 1(57): This grave could be seen from the surface: the wall of whale bones and stones was surfacing. The skeleton was disarticulated and not in order. The inventory consisted of several anthropomorphic and zoomorphic artifacts, stone arrowheads (two of them with split bases), and walrus-tusk articles. Amid these articles were three large toggling harpoon heads, bird spear tines, and bolas. Stone knives and spear points were found.

Burial 2(57): This grave was farther to the east of Burial 1(57). It was edged by with two whale bones that lay along its west side. The skeleton was under the sod and very poorly preserved. Portions of skull, ribs, and some foot bones were found. The inventory was very poor and consisted of a trough scraper by the head, two foreshafts, and a mattock by the feet.

Burial 3(57): One could see the grave from the surface because there was a wall. The north side of the wall was of stone, the south side was edged with a whale jaw, and the east side consisted of two whale scapulas and one stone. The skeleton was disarticulated and fragmented. There were handmade bone articles of bone near the pelvis and femur, adzes near the right shin, and a bone mattock near the left foot. One adze handle and a small pottery fragment were also found.

Burial 4(57): The grave was covered by a whale scapula that was lying directly under the sod. The inventory consisted of three harpoon heads in the shin area and one harpoon head near the skull. The rest of the objects were found under the skeleton, included three zoomorphic towing toggles, two bolas, and a number of oblong handmade articles. The stone item was a large knife with a long leaf-shaped blade.

Burial 5(57): No masonry or other evidence of a wall was seen, but the skull was covered with a big stone. There was a "winged object" right beside the skull, a harpoon socket piece near the right femur, a harpoon head near the chest, and an oblong bone artifact near the femur.

Burial 6(57): The grave could be spotted from the surface because two whale jaws bounded the burial. After removing the sod, it was discovered that the jaws had been placed on several walrus scapulas. The skeleton was supine, but the skull was face down. There was a ceramics paddle in the pelvic area, a bone awl near the head, a stone knife by the left shoulder, and bird bones, a trough scraper, a needlecase with needles, and two harpoon heads near the right shoulder. There was a bone button above the pelvis on the right side. The rest of the items—fragments of pottery, fragments of bone and stone articles, and pieces of wood—were concentrated mainly to the right side of the head.

Burial 7(57): The masonry that bounded the grave on three sides had pierced the surface. The condition of the skeleton was poor. Nearly all the objects found in this burial were near the head. There was a bone button on the left side and a bone button and a slate knife on the right. A little deeper in the skull area were three harpoon heads, stone points for javelins, and three adzes.

Burial 8–9(57): The masonry was surfacing on three sides. The position of the skeleton was unusual in that the torso and arm bones were placed in anatomical order, and the legs were bent at the knees and turned to the right, almost perpendicular to the backbone axis. Under skeleton 8(57) was skeleton 9(57), the latter being separated from the former by a large flat stone in the femoral area and by a whale scapula in the chest and skull area. Not many objects were found near the skeletons, and it was easy to determine what belonged to each individual. Burial 8(57) had a fragmented slate knife near the head and pieces of a clay vessel by near the femur. There were similar pottery fragments and slate knife fragments near the head in Burial 9(57).

Burials 10–11(57): These burials were below Burial 8 and 9(57). The skeletons had been placed next to each other on one wooden floor. There was a wall of slate plates under this floor. Big vertically-placed stones formed the side wall of the burial. The wooden floor was covered with fur, and the decomposed remains of the latter covered the skeletons' bones. The burials included: slate knife fragments and harpoon heads with pegs in them by the femurs of both skeletons, another harpoon head near the head, and ornamented snow goggles under the femurs, below the skeletons.

Burial 12(57): The grave had no wall. The skeleton was on its left side with its legs flexed. Near the head and thigh there were several bird spear tines and two bone arrowheads. Small fragments of pottery could be seen.

Burial 13–14(57): The skeletons were found in the same burial, lying next to each other with their femurs crossed. The graves goods included: a carved towing toggle in a zoomorphic shape, a needle case, a central tine of a bird spear, and a trough scraper.

Burial 15(57): The grave was covered by stones, some of which obviously used to be part of the grave's side wall. The bones were in poor condition. There was a ceramics paddle on the femurs. Diagonally below the femurs was a long narrow mattock; another mattock lay 0.75 meters farther from the left femur. There were two groups of several bolas to the right of the femur and by the feet. There was a big slate knife to the right, near the head, and pottery fragments to the left. Two bird spear tines, fragments of stone tools, and some polar-fox and waterfowl bones were also found.

Burial 16(57): A triangular wall of whale jaws that were easy to see without digging bounded the grave. The skeleton was disassembled, and many of the bones (including the skull) had been crushed. Among a great number of adult bones were found a child's bones. The inventory, concentrated in the foot area, was quite scant, and consisted of stone tool fragments, pottery fragments, two bird spear tines, one bone arrowhead, and a small shovel made from a seal scapula.

Burial 17(57): This aboveground burial was in ruins to the point that we can speak only of the skeleton's general position. With the exception of one pottery fragment, the grave goods included only bone objects near the lower extremities. Four toggling harpoon heads with foreshafts, arrowheads, bird spear points, snow goggles, bolas, bits of a bow, and one ice pick were found.

Burial 18(57): The grave was bounded by a large quadrilateral wall, three sides of which were made of whale jaws up to two meters long on three sides, and stones on the fourth side. This wall could not be seen from the surface. The skeleton was prone, its extremities extended. The grave cover's large stones had crushed the bones of the extremities, skull, and ribs. Some decayed pieces of leather clothing were found under the skeleton. There was a bone arrowhead by the skull, sled runners of walrus tusk to the right of the shin bones, and two toggling harpoon heads near the feet. Other items included a walrus-tusk mattock, a trough scraper, and one bone arrowhead.

Burial 19(57): In the skull area, the burial was covered and had been partially crushed by the bone of Burial 18(57)'s northern wall. The grave goods were placed in two areas: by the head and by the femurs. Near the skull were several bone arrowheads, two toggling harpoon heads, a stone adze (on the

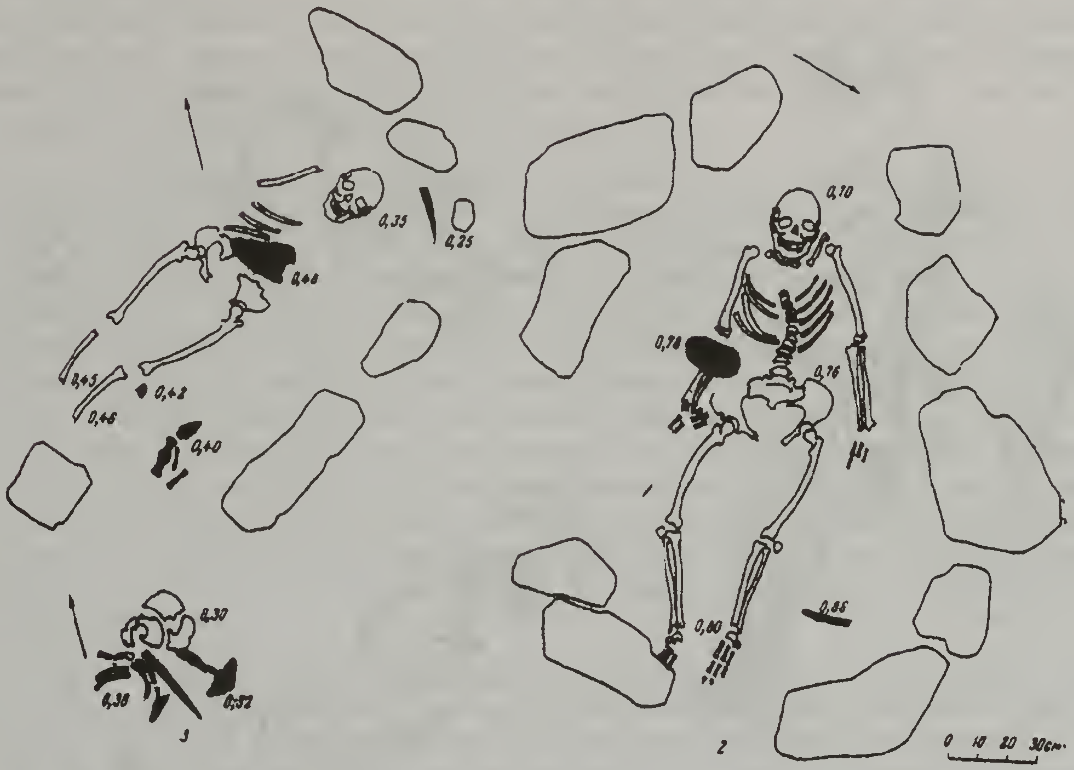


Figure 4. Burials 1–3(58).

left), slate knives and their fragments, and a bone button (on the right). To the right of the femurs were an adze and slate knife fragments, to the left, an ulu and various small carved bone and stone articles.

Burial 20(57): The grave was a surface burial, with the body lain directly under the sod. The skeleton was preserved in anatomical order, but all the bones were fragmented and in poor condition. There were slate knife fragments by the skull; four bow drill mouthpieces (three were of deer toe bones), four bone arrowheads, a bird spear point, and an ice pick near the femur. An engraving tool's compound handle was also found near the femurs.

Burial 1(58) (Fig. 4): The grave was surrounded by an oval stone wall. The skeleton was badly damaged, although the remains were in anatomical order. The grave goods included some traces of pottery. There were two slate knives and a flake in the pelvic area; a fragment of a slate knife near the left knee; and a point, a drill mouthpiece, and two tubular bones near the left shin. To the right of the skull were traces of ochre. There was a mattock was above the burial.

Burial 2(58) (Fig. 4): The grave was surrounded by an oblong stone wall. There were traces of fur bedding. The skeleton was in satisfactory condition and in anatomical order. The grave contained a slate knife on the right elbow and a carved bone artifact near the left shin.

Burial 3(58) (Fig. 4): The remains consisted of a fragmented skull and several small bones; there were some objects of bone. Among the grave goods were one "winged object" with traces of wood, placed southeast of the skull, and a harpoon socket piece and a piece of walrus tusk to the south of the skull.

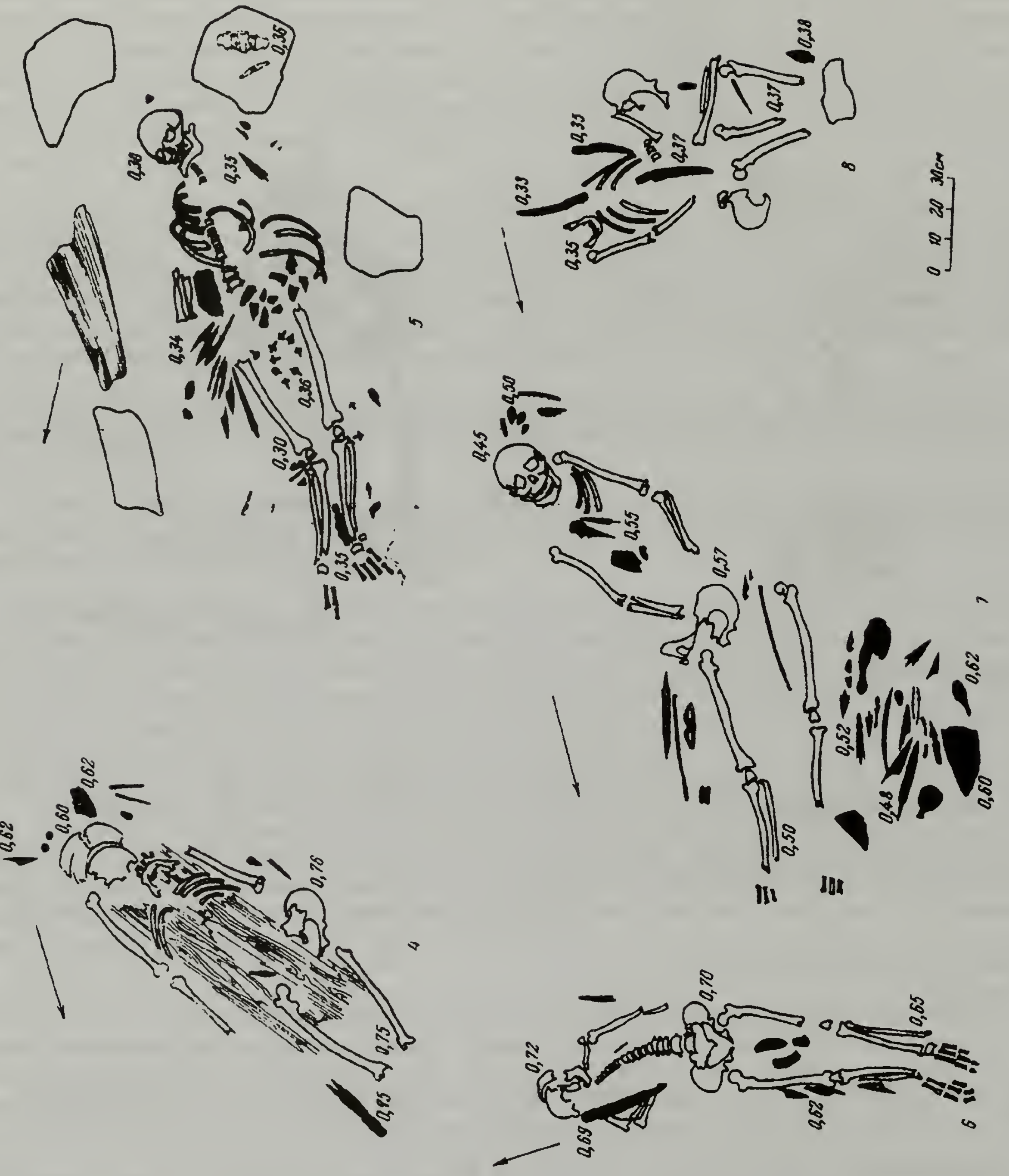


Figure 5. Burials 4–8(58).

Burial 4(58) (Fig. 5): Traces of a wooden bedding and a wooden cover were found. The skeleton was in anatomical order but in poor condition. Some objects in the grave were made of bone, such as: harpoon heads and a slate knife found near the skull, a harpoon socket piece near the right shin, two arrowheads in the pelvic area, three oblong carved bone artifacts near the left shoulder. A walrus tooth, two round pebbles, and bird bones were found near the skull as well.

Burial 5(58) (Fig. 5): A whale rib bounded the burial on the east, forming one "wall." The rest of the walls were made of stone. The skeleton was in anatomical order and in good condition, though some parts were missing. A rich stone and bone inventory was found, including harpoon heads: one lay to the left of the chest and two near the right side of the pelvis. Near the left shoulder, under a big stone, were a "winged object," a fastener, a sinker, two carved bone artifacts, and part of a compound hook. There was an unbroken carved bone article near the skull. To the right of the pelvis, near the harpoon heads, were two foreshafts, an ice pick, and three bird spear heads. There was a carved bone article and a broken needle near the right knee. Two carved bone items lay near and outside the right shin. Outside of the left knee were a small bone shovel and small carved objects. A bit lower, there were part of a compound hook and a shell. Nine objects shaped like tops were found between the legs. Two fragments of an ornamented carved bone artifact lay between the shins. Amid the stone inventory and near the harpoon heads and bird spears were flakes. There was a flat triangular slate point under the right shin, a broken retouched point, and fragments of slate in the pelvic region. Above the right wrist was a large slate knife with a bone dowel in good condition.

Burial 6(58) (Fig. 5): The skeleton was in anatomical order but in very bad condition. The grave goods included bone and stone tools. Three harpoon heads were placed along the outside of the right leg. There was a mattock near the right arm, an arrowhead near the left shoulder, a stone point (awl) near the chest, and a scraper, a flake, and a slate knife between the thighs. There was a mattock above the burial.

Burial 7(58) (Fig. 5): There were three bone boat-hook heads in the pelvic region, and two walrus-tusk sinkers, a carved bone item, and a ornamented knife handle near the skull. Near the outside of the right thigh were an oblong carved bone article, a small bone bow drill, an animal toe bone (the mouthpiece for a drill), and snow goggles. There was an awl and an arrowhead near the chest, and a small bow drill near the left thigh on the inner side. On the outer side of the left leg were harpoon heads, a carved drill mouthpiece with zoomorphic decoration, two ice picks, an awl, two fish points, a walrus tooth, two carved bone artifacts, two animal teeth, and two bone spoons. Among the stone inventory there was a scraper near the skull, a slate knife, and a retouched flake. Near the skull, there was a retouched obsidian flake along with the sinkers mentioned above. A broken point and a flake were found between the left thigh and the drill mouthpiece; under the drill mouthpiece were two adzes, and there was a slate blank for a knife near the left foot.

Burial 8(58) (Fig. 5): Some parts of the (fragmented) skeleton were missing, including the skull, and some bones belonging to another individual were found. There was little else in the grave: a stone point near the left thigh and two carved bone artifacts below the pelvis. There were also three mattocks of walrus tusk found.

Burial 9(58) (Fig. 6): The skeleton was extremely fragmented. The grave goods consisted of one point and a flake.

Burial 10(58) (Fig. 6): The skeleton was in anatomical order and was surrounded by a stone feature. Between the stones of the wall, closer to the right shoulder of the skeleton, was a big slate knife. There was a similar knife under the skull, and a needle case had been placed on the knife. There were mattocks in the grave; one of them was over atop the stones.

Burial 11(58) (Fig. 6): The skeleton was extremely fragmented, and there was nothing else in the grave.

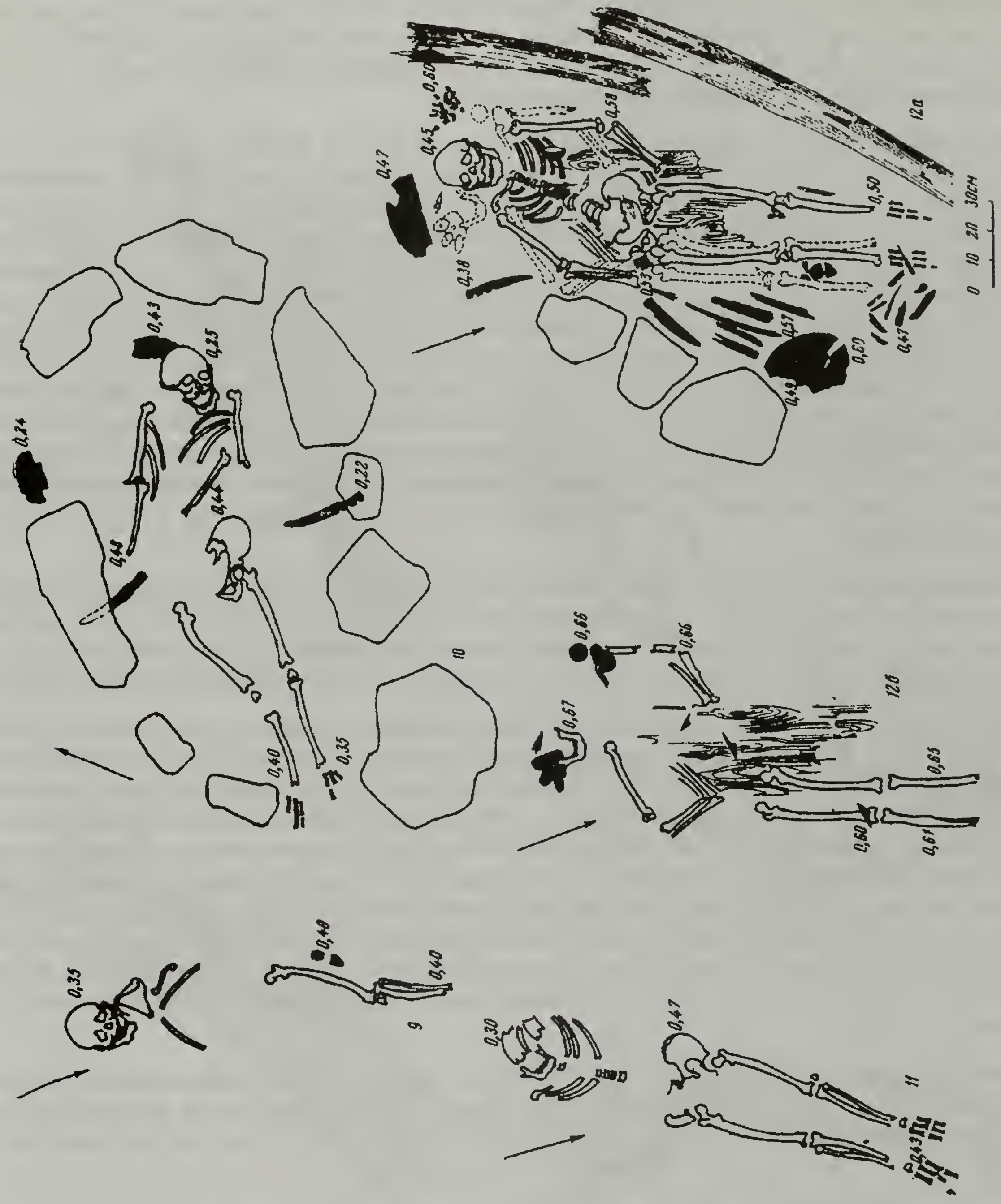


Figure 6. Burials 9–12(58).

Burial 12(58) is a double burial (A and B) (Fig. 6): The grave was surrounded by a wall made of stones and whale bones. Both the skeletons were in anatomical order, lying supine, one on top of the other. Only the mandible of the lower skeleton (B) (obviously male) was found. The upper skeleton seemed to be female. There were traces of a wooden floor between the two skeletons.

The grave contained a rich inventory. There were two harpoon heads between the skeletons, near the skulls and pelvises, and there were more harpoon heads near the right thigh of the upper skeleton, between the skeletons near the chest, and near the right knee. There were five bird spear heads in the pelvic area between the skeletons. There were plugs for floats on both sides of the skull. Near the chest was a needle case with three needles in it, and under the needle-case was a carved spindle-shaped object. Near the left shoulder was a trough scraper of walrus tusk. Three bone fragments, a foreshaft, and a harpoon socket piece lay parallel to each other near the upper skeleton's right thigh. Near the right elbow of the upper skeleton were two mattocks; one with three cuts on it. Near the left shin of the upper skeleton was a foreshaft; by the right shin a broken vessel. Below the feet was a complex of poorly preserved objects: foreshafts, a sinker, and bone fragments.

Among the stone inventory were a large ulu and a broken point near the skull. There was also an adze, 18 fragments of rock crystal, and a retouched piece of chalcedony. Near the upper skeleton's left knee were three red stone fragments. Near its right shin were four slate knife fragments.

Burial 13(58) (Fig. 7): The skeleton was on its side, the bones somewhat displaced and fragmented. The grave contained two zoomorphic bone carvings, a bone scraper, and an awl near the right thigh and pelvis. A fragmented child's skull and ribs were found near the skull. There was a mattock and traces of pottery near the right leg.

Burial 14(58) (Fig. 7): Together with Burial 15, this formed a double grave surrounded by a stone wall. The skeletons of both graves were in anatomical order. The grave contained many objects. Among the bone inventory were five harpoon heads, near the skull of skeleton 15 and near the right shoulder and elbow of skeleton 14. A harpoon socket piece and two foreshafts were parallel to the right shoulder of skeleton 14. Beside them were two finger guards. Seven arrowheads were found on the right side of skeleton 14: one under the femur; one by the right wrist; and five, together with foreshafts, by the right elbow. One of the arrowheads was on the right part of the pelvis of skeleton 15. There was a mattock between the skulls. Near the skull of skeleton 14 was a carved walrus-tusk artifact, near the other skull a bone ball. A small bone shovel was found on top of the pelvis of skeleton 15, and there was a walrus-tusk wound pin on the pelvis of skeleton 14. A "winged object" was found near the right knee of skeleton 15, and there was an anthropomorphic carving to the right of the pelvis. In the stone inventory were a slate knife near skeleton 15's chest, and a scraper near its skull. There were two points near the right radius of skeleton 14, and three points with arrowheads by the right elbow.

Burial 16(58) (Fig. 7): The skull was crushed and the skeleton fragmented. The grave goods included two carved bone articles near the skull. Traces of red ochre were also found in the grave.

Burial 17(58) (Fig. 7): The skeleton was fragmented and the stone grave goods were few, amounting to only one deformed harpoon head (in the bottom of the grave), two bird femurs near the right and left shoulders, a slate knife under the skull, and a large slate knife near the right knee. Between Burials16 and 17 a large whalebone served as a grave marker. This bone was Y-shaped and had three holes drilled in it.

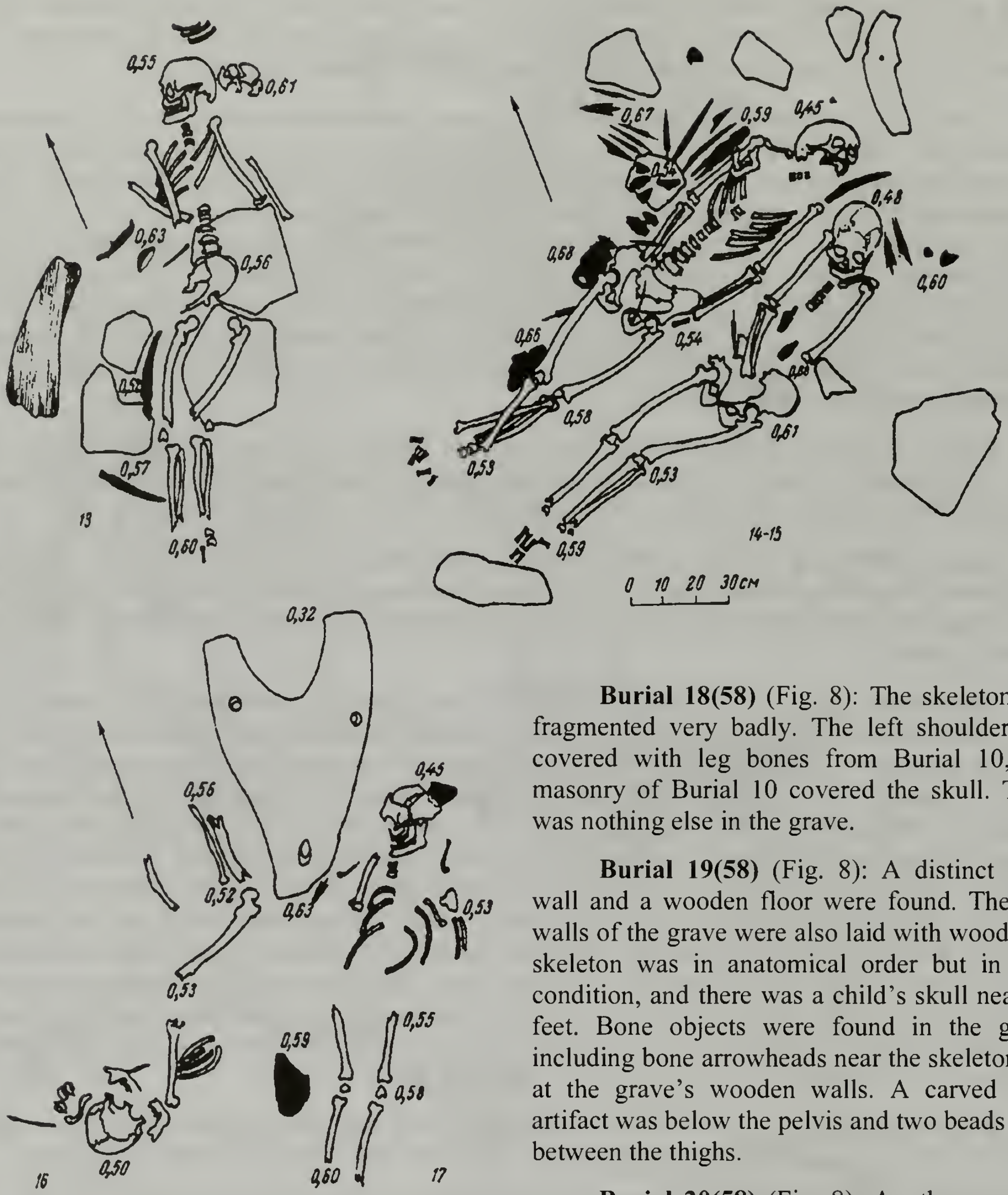


Figure 7. Burials 13–17(58).

Burial 18(58) (Fig. 8): The skeleton was fragmented very badly. The left shoulder was covered with leg bones from Burial 10, and masonry of Burial 10 covered the skull. There was nothing else in the grave.

Burial 19(58) (Fig. 8): A distinct stone wall and a wooden floor were found. The side walls of the grave were also laid with wood. The skeleton was in anatomical order but in poor condition, and there was a child's skull near the feet. Bone objects were found in the grave, including bone arrowheads near the skeleton and at the grave's wooden walls. A carved bone artifact was below the pelvis and two beads were between the thighs.

Burial 20(58) (Fig. 8): Another person's shoulder, forearm, pelvis, and femurs lay parallel to the main skeleton. To the south, near the feet, were the enclosed fragments of a child's grave (20A). The grave goods included arrowheads (by the feet), a carved antler artifact, a hook, and a piece of painted rock below the arrowheads. There was an adze between the thighbones. Near the child's grave were an ulu, a bone flake, a point, a sinker, and a harpoon head in poor condition.

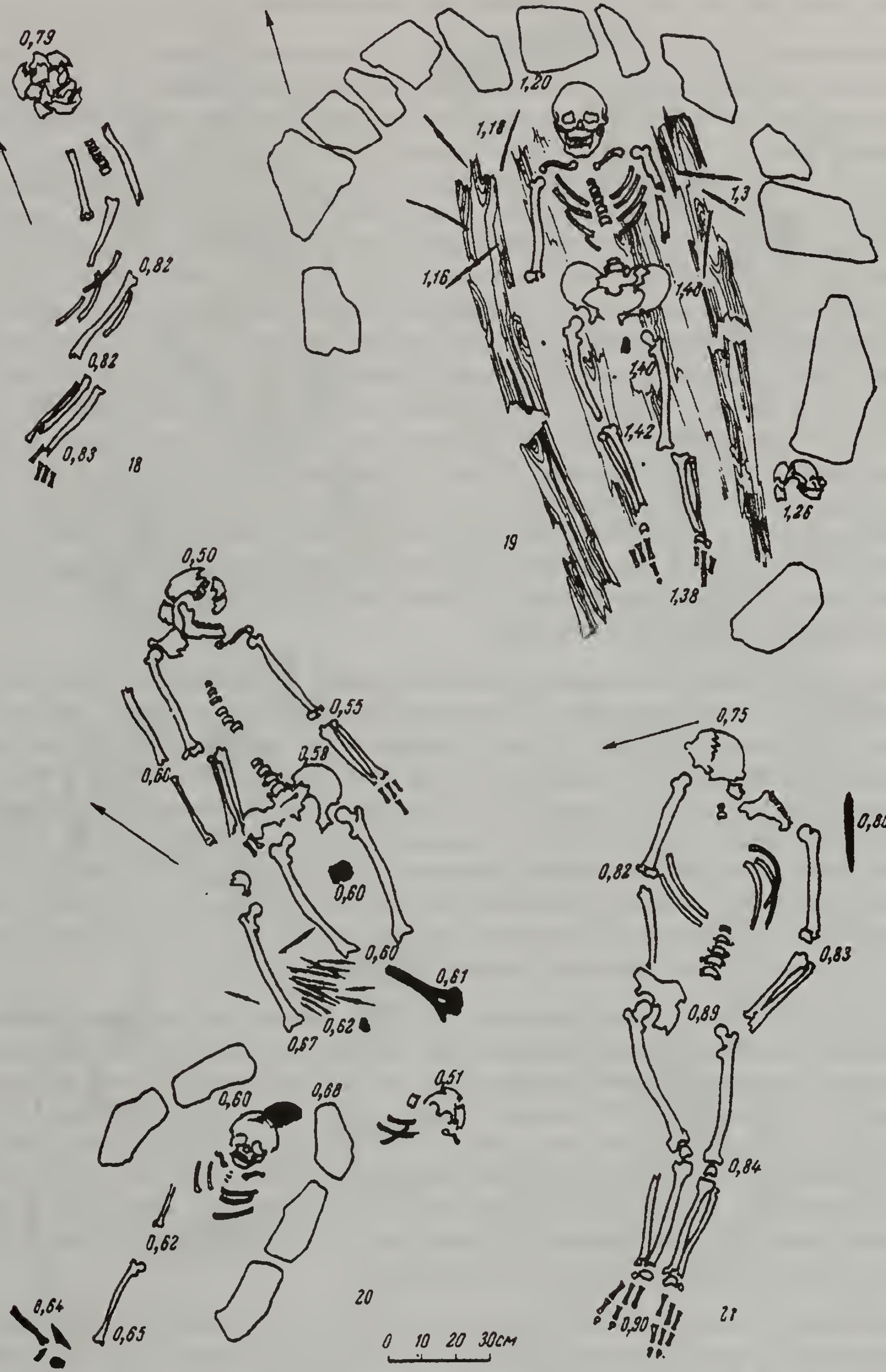


Figure 8. Burials 18–21(58).

Burial 21(58) (Fig. 8): The skeleton was in anatomical order except that the skull had been shifted downward. The grave contained an ice pick and a deer antler (above the burial).

Burial 22(58) was a double burial (A and B) (Fig. 9): The head and the west side of the grave were bounded by a structure. Both skeletons were in anatomical order, but in poor condition. The lower skeleton, B, was supine, and the upper skeleton, A, lay atop it, on its right side. There was a wooden floor. The grave contained many objects, including 17 harpoon heads. Along the left shoulder bone of the upper skeleton there was a foreshaft. Near the right shoulder bone of the upper skeleton was a deformed carved artifact that may have been a fastener; a similar article was found near the left shoulder bones of both skeletons. Near the right shin of the upper skeleton there were five carved bone artifacts, probably bird spear points; above the bird spear points was a boat-hook head. Near the upper skeleton's right thigh, above the boat-hook head, there was an ice pick, and above that, near the boat-hook head, was a walrus-tusk artifact (probably a harpoon finger guard). Below the ice pick were two fasteners. Among the objects found near the foot of the grave was a stone burin with a bone handle. A spirally twisted bone pendant was found near the upper skeleton's chest. Two nail-shaped carved articles were found near the lower skeleton's skull. There was a carved spool-shaped artifact, a button with a face on it, and a plug from a float near the spiral pendant. A similar ornamented plug lay on a big stone that covered the burial in the pelvic area; other studs were found amid objects near the foot of the grave. There was an arc-shaped carved bone artifact (perhaps a bow drill) near the ice pick. By the feet were a shovel-shaped carved article, a long bone, and a bone that had evidently been processed. A seal scapula was found near the lower skeleton's left thigh, above the complex of harpoon heads. The objects near the lower skeleton's left shoulder may have formed a compound burin handle.

Among the stone items were two slate points (above the skulls), five points much lower in (between the skulls), and a fragment of a slate point above those points. Seventeen flakes of stone and five of chalcedony were found near the neck vertebrae of both skeletons. There were stone blanks near the upper skeleton's right shoulder, and there was another slate blank near the upper skeleton's left elbow. There were three adzes and retouched jasper point near the pelvis. Below the adzes was a ground slate artifact and below it a jasper arrow point. A slate point was found near the lower skeleton's left thigh, and a broken slate knife near the upper skeleton's right knee. There was a large slate knife on the upper skeleton's right shin, and there was a flake, a scraper, and a point blank near the ice pick. A chalcedony scraper was found near the upper skeleton's left elbow. There were pebbles on the outer side of the lower skeleton's left knee. The rest of the stone items were among objects near the person's feet.

Burial 23(58) (Fig. 9): Near the main skeleton's right thigh was the skull (without mandible) of an adult, and near the right side of the pelvis a fragmented child's skull. Among the grave goods were carved bone artifacts, a mattock lying 60 centimeters to the east of the skull, and three thigh bones of other individuals. In the stone inventory were a point, an adze, a blank, and an ulu, which lay together between the skull and the mattock. There was a piece of a slate knife right beside another individual person's thighbones, and a broken point and a piece of some slate tool under the left thigh. There was a point near the pelvis, and a walrus scapula near the skull. To the northeast of the skull was a large poorly preserved clay vessel containing traces of organic remains. The vessel was covered with a walrus scapula on which lay a point. Another scapula covered the first scapula and the point.

Burial 24(58) (Fig. 9): The grave was half ruined by the trench. Only some bones from the skeleton were found; the feet were oriented to the northwest, and the skull was missing. The grave's side walls could be distinctly seen, and the bottom of the grave was paved with slate slabs. The grave goods included a harpoon head with a foreshaft and an arrowhead near the left thigh. Between the shins were two harpoon heads, one in good condition and the other in very poor shape. Alongside the right shin was a bone plate. Between the shins were stone blanks, a piece of ochre, and a bone artifact. Below the feet was a "winged object" and a point.

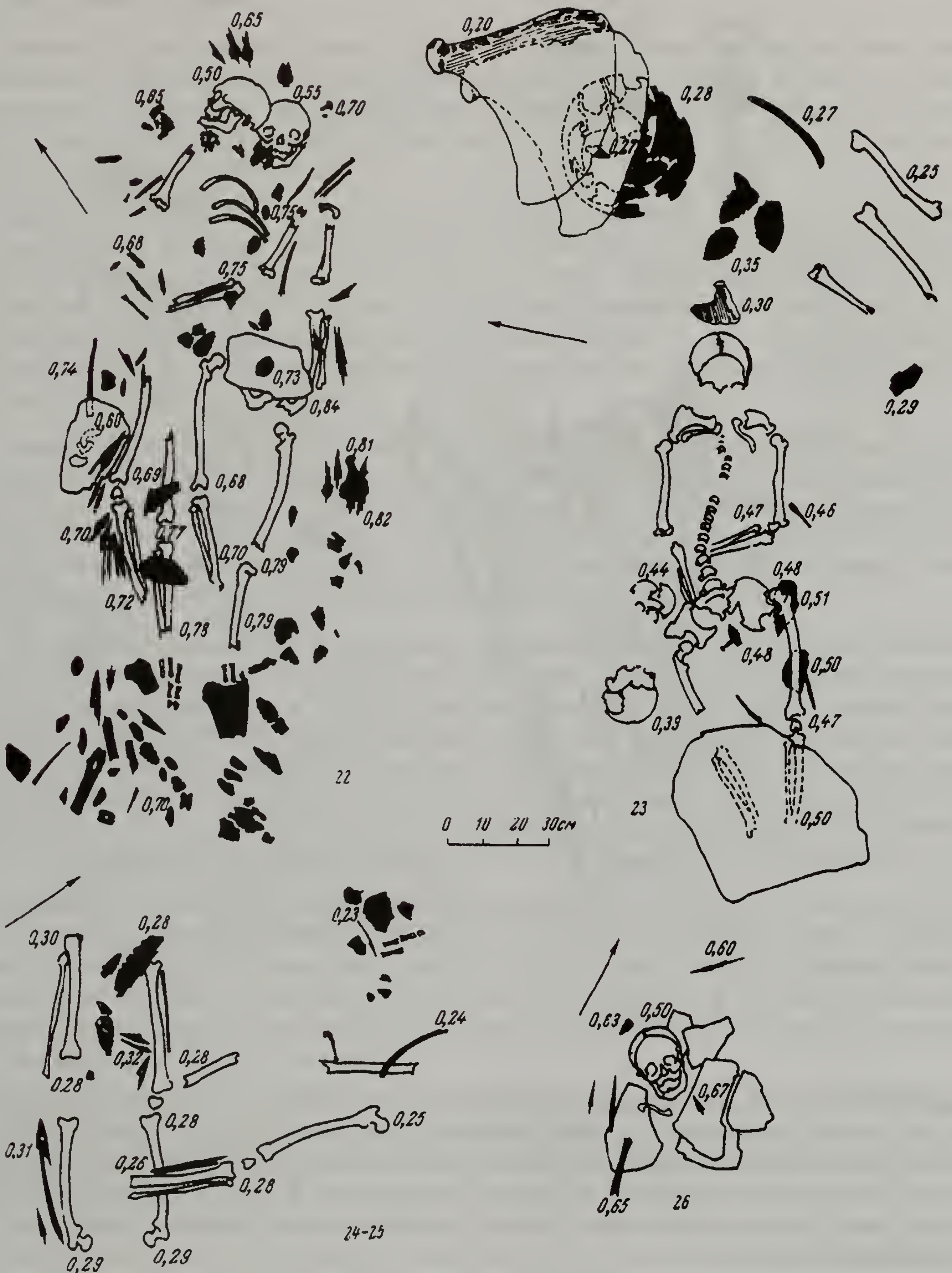


Figure 9. Burials 22–26(58).

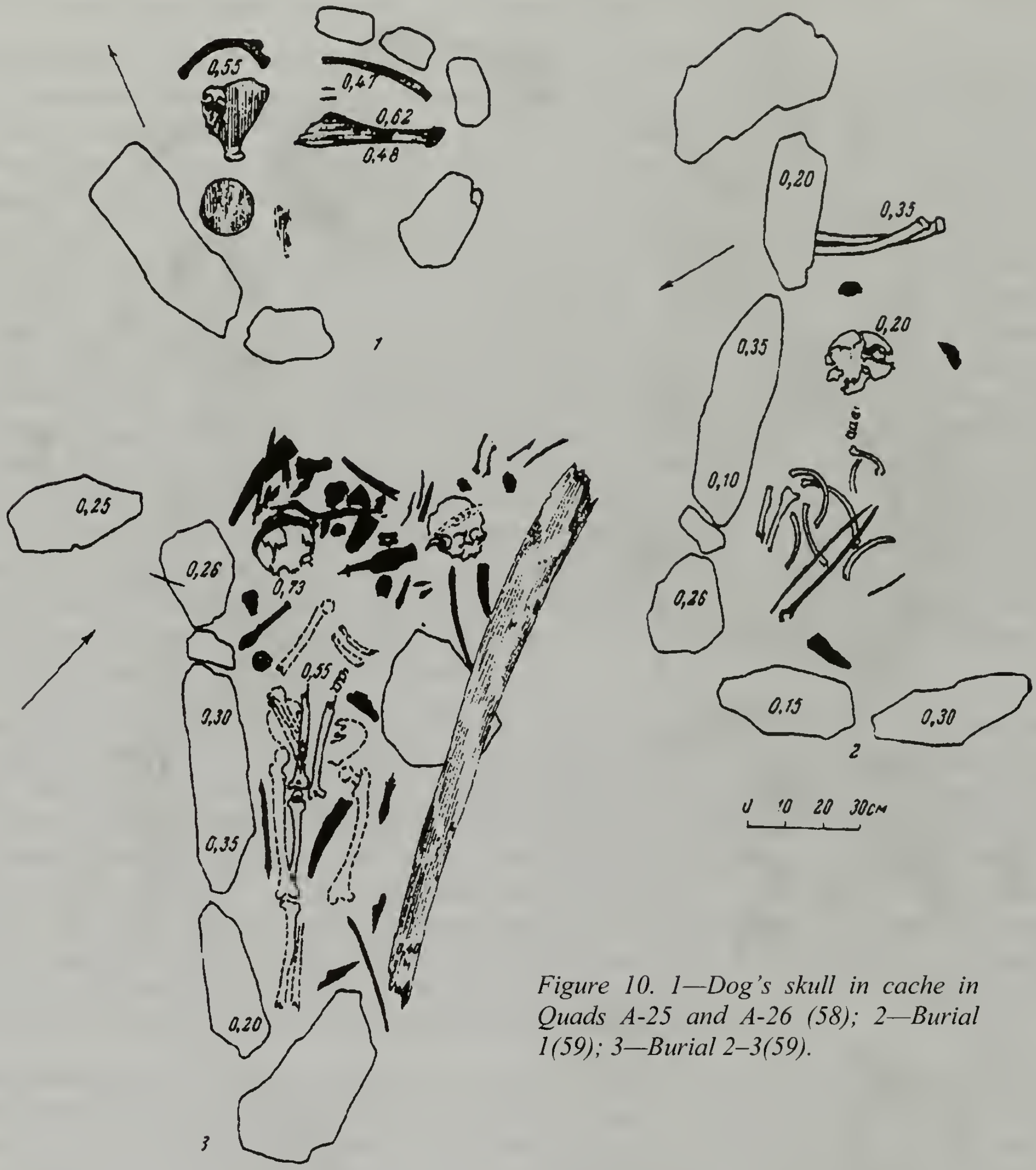


Figure 10. 1—Dog's skull in cache in Quads A-25 and A-26 (58); 2—Burial 1(59); 3—Burial 2–3(59).

Burial 25(58) (Fig. 9): The right thigh of skeleton 24 was covered with the shin bones of skeleton 25, which lay several centimeters higher than the former. The feet of skeleton 25 were oriented to the southwest, and (the skull was missing). There was not much in the grave: a broken bird spear point near the left shin, a bird bone, and a bone with evidence of processing on the right thigh. Farther to the north, near the hand, were two bone artifacts, the remains of ceramics, a piece of pumice, a piece of ochre, two pieces of pyrite, and a mattock.

Burial 26(58) (Fig. 9): The grave contained part of a shoulder and a well-preserved skull, which was oriented westward. The skull was placed on a layer of slate plates, at 50 centimeters' depth. The grave goods included a poorly preserved harpoon head, a bone with traces of processing, and a worked bone article, all near the lower jaw. There was a point a bit farther away. Above the skull were a stone point (end blade) and a bone arrowhead.

Higher in the earth formation, which had been made during the 1955 excavations, were objects possibly belonging to this grave: a bird bone, a bone fragment, a wound pin, a non-toggling harpoon point, a worked bone item, a polished slate point, a retouched inset (end blade) for an arrow, a bone bar, arrow points, and a hollow bird bone.

Besides the graves described above, in 1958 and during other seasons, various objects, called "surface materials," were found beneath the sod in various parts of the cemetery. In addition to these materials, an oval stone feature was found during the excavations of Quads A-25 and A-26, in which walrus bones, a flake, and two worked bone artifacts were discovered. There was also a dog skull on a walrus scapula at 0.55 meters' depth (Fig. 10:1).

Burial 1(59) (Fig. 10:2): The grave was bounded on the northwest by a wall of six large stones, and on the southeast by two small whalebones lying at a depth of 0.35 meters. The wall formed by these stones separated the grave from Burials 2 and 3. The skeleton was mostly decomposed; only a few ribs and fragments of the right elbow remained. The skull was crushed and incomplete. The grave goods included an ornamented walrus-tusk buckle, which lay above the skull. A slate knife fragment lay to the left of the skull. In the area where the pelvis should have been were two ornamented plates. To the left of the plates were two carved walrus-tusk items.

Burial 2–3(59) (Fig. 10:3): This was a double burial. On the southwest border was a wall of five stones, on the northeast, one stone with a large whalebone lying on it. There was also a large stone near the head. The skull of skeleton 2 lay on its base with the back to the northwest, covered with stones. Twenty-five centimeters to the northeast was the skull of skeleton 3. Skeleton 2 was very fragmented, with only a few bones preserved. Skeleton 3 was poorly preserved, supine, and partially covered with fragments of skeleton 2. The pelvis was crushed, and many bones were missing.

The double Burial 2–3 had many objects in it, mainly near the skulls. Carved walrus-tusk items included a fragmented plate diadem on the skull of skeleton 2, and three toggling harpoon heads. Southwest of the harpoon heads were a mattock, a harpoon foreshaft, and two carvings: one an anthropomorphic statue, and the other an anthropo-zoomorphic ornamented item. There was a harpoon finger guard below the ornamented item, and farther to the north were three carved artifacts. A boat-hook head lay under the skull of skeleton 3. Among the lithic items were small points, scrapers, an adze blank, and three flakes. Beside these items there were an antler handle for the adze, crushed animal long bones, and two bird bones. A harpoon brace, a drill mouthpiece, and three carved articles lay between the skulls.

To the right of the skeletons, near the right shoulder of skeleton 2, was an ornamented object, below that a carved article (the handle of a retouching tool), and near the right elbow a hollow ball with holes in it. To the right of the pelvis was a slate tool fragment, and near the right thigh a carved walrus-tusk item. In the chest area of skeleton 3 were a harpoon foreshaft and a bone handle, in the pelvic area a slate knife fragment, to the right of the pelvis a walrus-tusk wedge, near the left thigh a harpoon head, and below that two harpoon heads and a foreshaft.

Burial 4–5(59) (Fig. 11): This is another double grave. It was bounded by a stone wall on the north and east sides; on the west, the grave was marked with a whale jaw. Skeleton 4 was supine and the bones in anatomical order, except that the right shin was missing. The arms were flexed at the elbows, and the legs were extended. The skull was poorly preserved and was on its left side. Traces of wooden flooring were found under the burial. This flooring was placed on several whale scapulae. The grave contained two harpoon heads (near the right thigh), trough scrapers (in the pelvic area), a foreshaft (by the left shoulder), and carved artifacts (in the pelvic area). A stone point was found near the neck vertebrae, two slate knives were near the chest, and between the knives was a sandstone fragment. Near the left shoulder there was an adze, and near the right upper arm were a point, a slate tool fragment, a retouched slate plate, and a zoomorphic carving made of green transparent stone. A piece of hematite with a one polished side was found as well. There was a slate tool fragment near the right shoulder.

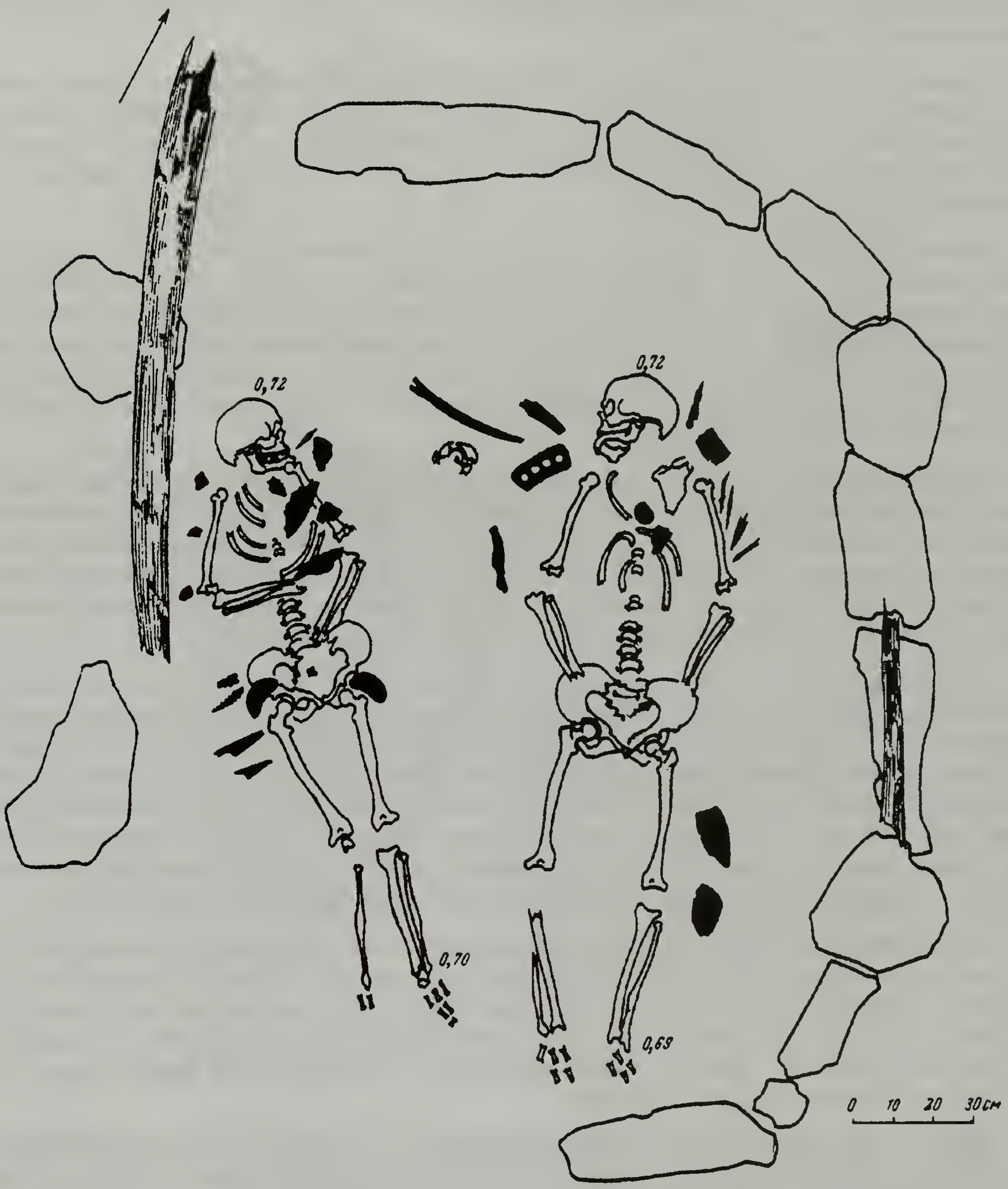


Figure 11. Burials 4–5(59).

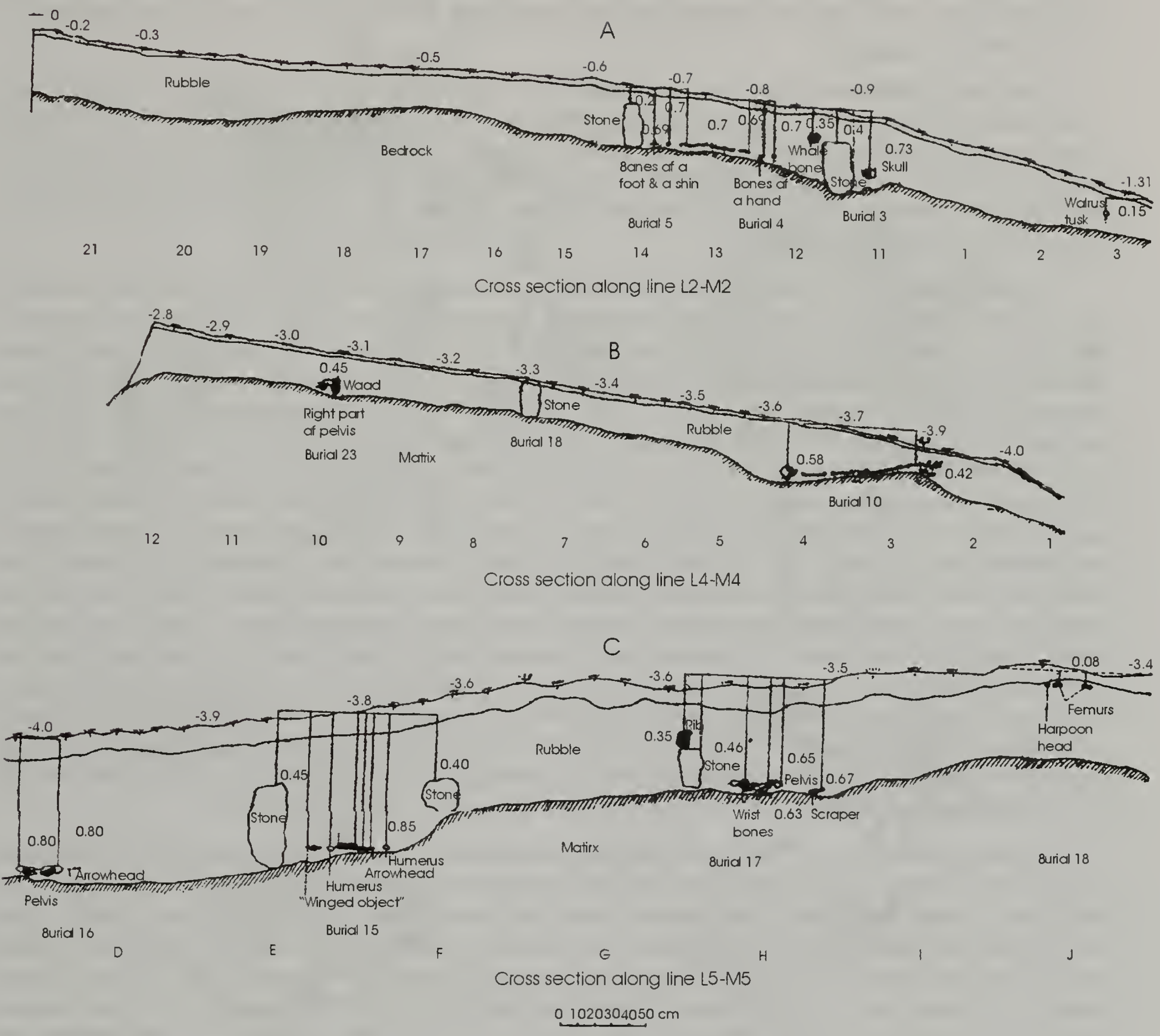


Figure 12A. Cross section of Burials 4–5(59); 12B. Longitudinal section of Burial 10(59); 12C. Cross section of Burials 15–18(59); numbering in A and B corresponds to series 39–26 and 19–18 of the general plan.

Burial 5: This grave was oriented the same way as Burial 4. The skeleton was in proper anatomical order and supine. The skull was preserved, and the face was looking toward the skull of Burial 4. The rest of the bones and the pelvis were crushed and poorly preserved. Between skulls 4 and 5 were fragments of a child's skull.

The grave goods were a walrus-tusk wedge to the right of the skull, a handle of a woman's knife somewhat lower, and a walrus-tusk mattock near the latter. Near the right shoulder was a stone burin with a bone handle, and near the chest an ornamented buckle and a stone adze. To the left of the skull was a harpoon-head blank and a fragmented slate tool. A poorly preserved harpoon head, an unfinished harpoon head, and two carved artifacts were found near the left shoulder. A slate point and a slate knife were found near the left shin and knee.

Burial 6(59) (Fig. 13): There were traces of wood above the burial, which contained a wealth of grave goods. To the right of the skeleton, near the shoulder, were a slate blank with bone arrowheads lying on it, a carved bone item fragment, two slate knife fragments, and a harpoon socket piece. Below these objects were two small points and a bone harpoon head. There was a stone adze and a semitransparent quartz fragment near the knee. Farther to the right were four sawn pieces of walrus tusk. Below the feet was the central part of a (two-part) leister. There were slate knives with a carved walrus-tusk artifact on top near the chest. Two leister points were found to the left of and slightly higher than the skull. To the left of those was a worked seal rib. Below the rib were a stone burin-chisel and three bird spear points. A burin handle was found on the left shoulder. Below the handle was an engraving tool (a burin) with an iron working edge. There was a foreshaft blank to the left of the skeleton, parallel to the forearm. Even farther left was a multitude of items: three harpoon heads, two small boat hooks, three bone plugs for floats, five nail-shaped objects, a carved walrus-tusk item, and a "winged object." Close to the "winged object" were seven slate points, and below them five arrowheads. Near the pelvis and left thigh were two lateral inset blades, two points, four small points, an ice pick, arrowheads, a bird spear fragment, and a burin handle fragment. A little lower were a bone awl, an ornamented artifact, five flint tools, a harpoon socket piece, three worked bone articles, and slate tool fragments. Four harpoon head fragments, worked walrus-tusk artifacts, a number of flakes, a piece of ochre, and a piece of hematite were found near the knee. Farther to the left were an ice pick, and below it four quartz fragments below it.

Burial 7(59) (Fig. 13): This burial contained a number of items. To the north of the skull were a harpoon head blank, a nail-shaped object, and an anthropo-zoomorphic bone artifact. To the right of the skull were a stone burin with a bone handle, three bird spear points, and an ornamented buckle. Three nail-shaped objects and a bone tool fragment were found near the right shoulder, and there was a "winged object" near the elbow. There was another group of objects near the pelvis and the right thigh; these included a harpoon head, an ornamented anthropomorphic figure, more harpoon heads, a seal-scapula spoon, arrowheads, a foreshaft (among the arrowheads), and a slate-knife fragment. A fragmented slate knife and an arrowhead were found on the pelvis. To the left of the skull was a scraper, and to the left of the skeleton was a harpoon foreshaft, two harpoon heads, an antler fragment, and a leister point. Below this was one more group: four bone arrowheads and three small points. A harpoon socket piece and a blunt arrowhead were near the left knee.

Burial 8(59) (Fig. 13): This burial was in very bad condition. The skull and pelvis were crushed and fragmented, and the skull and part of the chest were covered by a whale scapula measuring 80 by 60 centimeters. Near the skull were a leister point, a bone drill point, and flakes. There was a zoomorphic figure and flakes near the chest. A fragmented slate knife, pieces of slate knives, a slate awl with holes in it, and an item of walrus tusk were in near the pelvis. There was an ornamented carved item near the right elbow. A point and a carved 8-shaped artifact were near the top of the right thigh, and below them was a seal figure, bone tool fragments, and flakes. To the left of the left elbow were an ornamented handle and a polished piece of hematite, and on the outside of the left thigh were a harpoon head, three flakes, and a bone tool fragment.

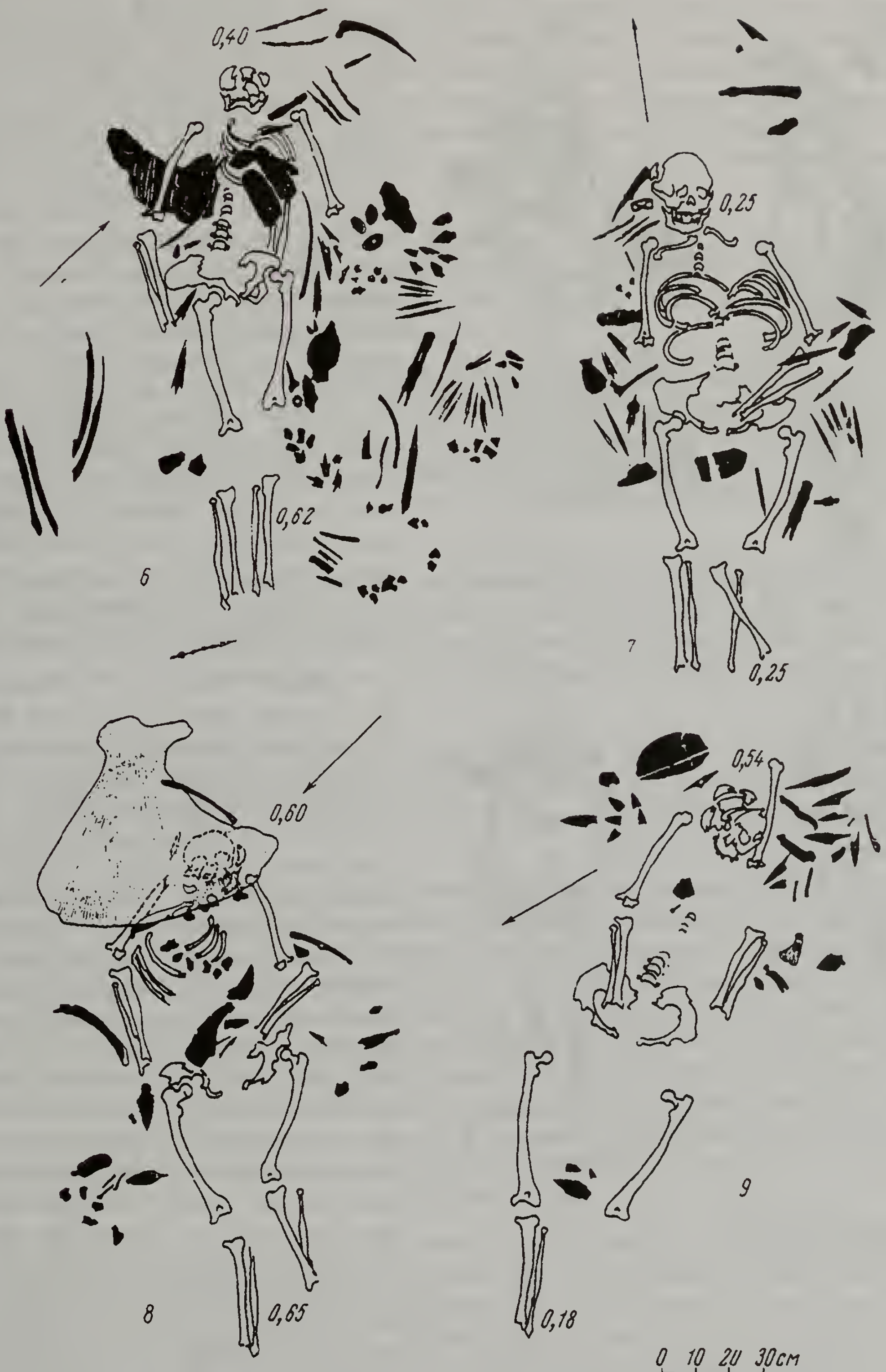


Figure 13. Burials 6–9(59).

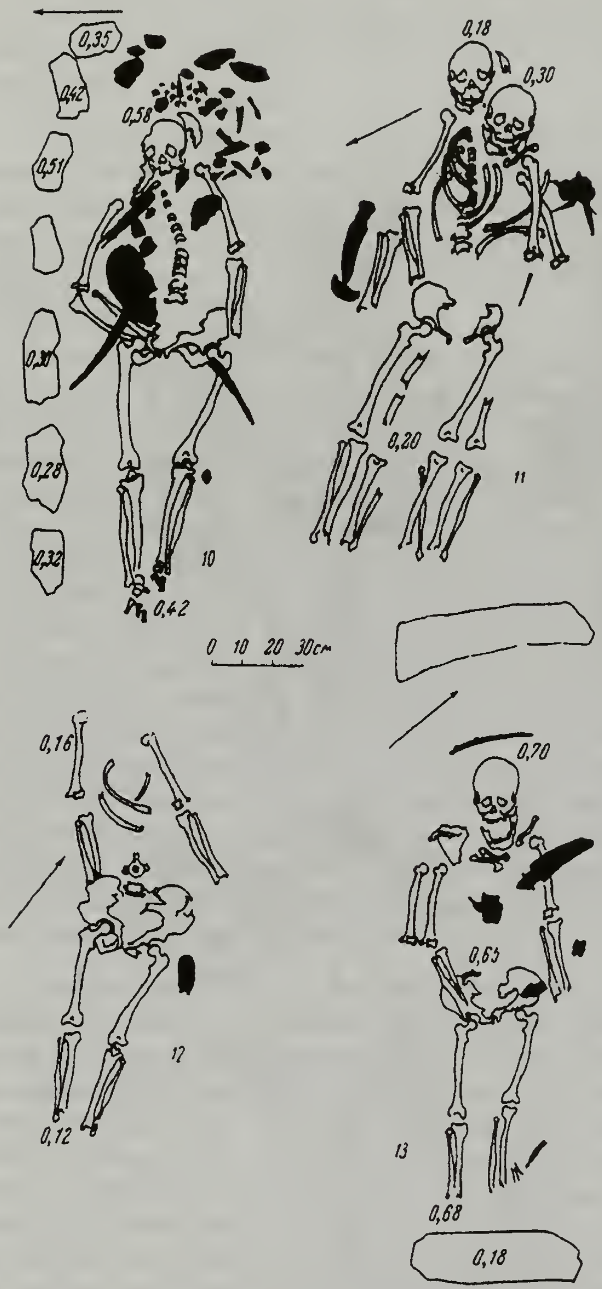


Figure 14. Burials 10–13(59).

Burial 9(59) (Fig. 13): The skeleton was supine and extended. The left shin was missing, the left shoulder bone was under the skull, and the bones of the right arm were in anatomical order. As the earth shifted downhill, the skeleton was disturbed, and the distance between the pelvis and the thighbones grew to 12–15 centimeters. The skull had been crushed and was on its left side. The skeleton was in very poor condition. Objects to the right of the skull included a harpoon head, four fragments of a large slate knife, a flake, a pointed object, and small slate point and one flint point. There was a piece of tufa and a worked artifact near the chest. Two small points and a large point lay between the knees. A group of objects to the left of the skull included harpoon heads, retouching tool handles, an ice pick, worked bone items, and a small slate point. Below these objects were a point, a fragment of a seal scapula with evidence of processing, an ornamented knife handle with a zoomorphic image, and a bone pendant.

Burial 10(59) (Fig. 14): The north side of this site was bounded by small stones. The skeleton was supine and in anatomical order, but the skull had been crushed. There were traces of a wooden floor above the skeleton. The grave contained a variety of goods, including a harpoon socket piece placed vertically near the chest, with the upper portion coming out at the surface. A group of carved walrus-tusk items were found to the left of the skull; these included two open-socket harpoon heads (one of which was broken), a burin handle, nine carved nail-shaped items, one worked item, a fastening for a *pykh-pykh*, three small bone rods, and an ornamented artifact; below these were three more worked items. A pendant with an image of a human face was found on the left near the chest, an adze handle on the left thigh, and a plug for a float not far from the adze handle. There was a mattock on the right thigh. A slate tool fragment, flakes, and slate knives were near the skull. To the left of the skull were a slate knife fragment, two flakes, two pieces of ochre, and two points. A fragment of a slate plate, two fragments of slate knives, and a massive fragmented knife were found on the chest, under the pendant.

Burial 11(59) (Fig. 14): This grave contained a double burial: the upper skeleton A was under the sod; the lower skeleton B was directly under A. Both of the skeletons' heads were oriented to the south-southeast. The skeletons were in a poor state of preservation. Judging by the remains, the skeletons were supine. Neither skeleton had its upper left arm bones, and B did not have a right shoulder bone and pelvis. The pelvis of skeleton A had been crushed, and the thigh bones were fragmented. The grave contained a mattock and a walrus-tusk trough scraper to the right of the forearms, three worked walrus-tusk items to the left of the skeletons, a slate plate under the walrus-tusk items, and another walrus-tusk artifact not far from the rest of the objects.

Burial 12(59) (Fig. 14). The burial was badly damaged. The skeleton, which was extremely fragmented and probably supine, was missing the skull and the major portion of the chest and vertebrae. The right side of the skeleton was exposed, and the bones were weathered. The only object found was a walrus-tusk trough scraper, near the left side of the pelvis.

Burial 13(59) (Fig. 14): The grave was bounded by two vertically placed stone plates at the head and feet. The skeleton was supine, the skull on its base. The skeleton was in anatomical order, but in poor shape (the left shoulder bone was broken, the pelvis crushed and fragmented). There was reason to suspect that the grave had once been a double burial but that the skeleton above the one found had been destroyed. Two right collarbones and one left one, and two right shoulder bones and one left one were found in Burial 13.

The grave contained a walrus-tusk mattock near the skull, and a slate knife fragment with a walrus-tusk artifact on it near the chest. There was another mattock near the left shoulder bone, and a mouthpiece for a bow drill below the mattock. To the right of the pelvis was a worked bone article. On the left side of the pelvis was a slate-knife fragment, and near the left shin were three fragments of a bone plate and a worked item.

Burial 14(59) (Fig. 15): The skeleton was in extremely poor condition. Of the skull bones, only a piece of the maxilla was found. The right hand bones were also missing. Twenty centimeters to the west of the right knee was a second skull, without a mandible. No traces of another skeleton were seen. The grave contained no other items.

Burial 15(59) (Fig. 15): The grave was bounded with stones on the north and the south. The skull lay on its base, the skeleton was supine, and the bones were in anatomical order. The right hand was under the pelvis. During excavation, traces of a wooden covering could be seen. Points and harpoon heads with two foreshafts were found to the right of the skull. There were six points to the left of the skull. A slate knife with ten flint arrowheads on it was to the right of the chest, and a worked item, bone arrowheads, and a slate dart point were below that. On the right near the elbow were a "winged object," and an arrowhead with a leister point on it. To the right of the right hand were a broken burin handle with a stone inset, a small point, two mouthpieces for a bow drill, an adze, and an arrowhead. A harpoon foreshaft was located along the right shin. To the right of the pelvis were a fragment of an arrow, a worked piece of walrus tusk, and arrowheads. Arrowheads, a button, part of a sandstone whetstone, and a float plug were found between the thighs. There was a float plug near the left shin.

Burial 16(59) (Fig. 15): The skeleton was prone, its skull crushed and extremely fragmented; the rest of the bones were in anatomical order. To the northeast of the skull were a spear point, a complex compound pendant, two harpoon head blanks, a fragment of a whale vertebra, two arrowheads, a harpoon head, a fragment of an ornamented object, a "winged object," a slate dart point, a stone arrowhead, a point blank, and a spear point. Near these items were two bone arrowheads, a worked piece of bone, a compound pendant, a drill mouthpiece, and three tines from a bird spear. Near the left shin and thigh was a foreshaft, and between the thighs an arrowhead, a broken leister point with bushing, and another leister point. To the southwest were a harpoon head, a boat-hook head, a walrus-tusk item, a worked seal rib,

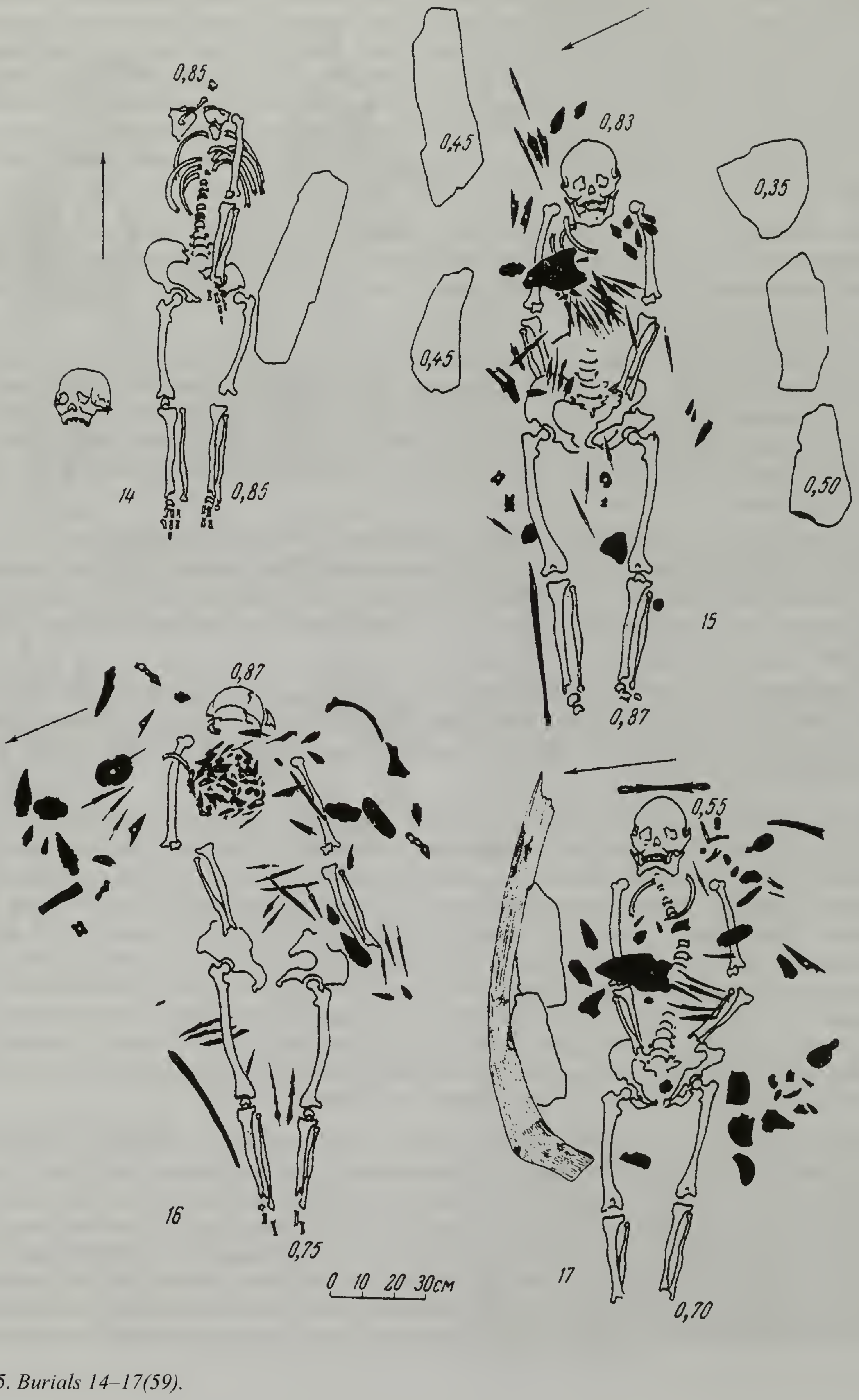


Figure 15. Burials 14–17(59).

two dart points, a rock crystal fragment, a peg, two harpoon heads, a "winged object," an ornamented artifact, a piece of worked antler, an arrowhead, a boat-hook head, and a compound pendant. Below these were a spear point, a dart point, arrow points, and three arrowheads. In the pelvic area were arrowheads and a leister point. In the back area, near the scapula, was a large complex of small walrus-tusk items including ten nail-shaped articles, nine buttons, compound pendants, ornamented artifacts with two holes, artifacts ornamented with a net design, 8-shaped items, fragments of other articles, and fragments of compound-pendant sections.

Burial 17(59) (Fig. 15): At the north end of the grave was a feature of two stones and a whale rib. An ornamented 8-shaped artifact and an anthropomorphic figure were found near the skull. A stone weapon head was to the right of the shoulder, and below that were fragments of slate knives. There was an adze between the thighs on the right side, and a fragment of slate knife, obsidian points, an end blade, a large slate knife, and a flake on the chest. Near the pelvis was a worked piece of jasper. To the left of the skull were a harpoon head, carved articles, a trough scraper, a fragment of a trough scraper, two worked pieces of walrus tusk, a piece of an arrow, and a worked object. On the left, on the shoulder bone, were an ornamented item, an arrowhead, a fragment of a slate tool, and a harpoon head. In the abdominal area were worked items and arrowheads. To the left of the pelvis was a complex of items: a trough scraper, fragments of slate tools, flakes, a bone artifact, an inset, and end blades. A trough scraper was near the left knee.

Burial 18(59) (Fig. 16): On the northeast side, the grave was bounded by a wall consisting of five stones. Both skeletons were supine and extended, one above the other. The skulls were fragmented and in poor shape. The upper skeleton's lower jaw was that of an old individual. The lower skeleton's lower jaw appeared to belong to a younger individual. The poor condition of the bones could be explained by the fact that this was an aboveground burial and had been penetrated by plant roots. A large group of objects was found 25 centimeters east of the lower skull at a depth of 0.50 meters and near fragments of a child's skull. This group of objects, along with the skull, is marked on the figure as Burial 18A.

An abundance of grave goods were found in Burial 18. Harpoon heads and their stone lateral insets were near the lower skeleton's skull, and there was a harpoon head to the right of the skull. There was an ornamented artifact near the chest, and below the artifact were a slate knife and knife fragments with a bone plate on top of them. There was a mattock near the right upper arm, and a stone point was near the top of the right thigh. There was a foreshaft under the right thighbone, and a "winged object" and a harpoon socket piece farther to the right. There were a "winged object" and harpoon shaft heads near the upper skeleton's skull, and sinkers and a worked bone item below them. A stone point and a scraper were farther to the right of the bone article. A large bone lance, ornamented and bearing a bas-relief walrus head lay on the skeletons. A group of other objects was located farther to the left of the lance and included a slate knife, an arrowhead fragment, two broken worked-bone items, a foreshaft, and a bone handle. There was a slate knife near the left thighbone.

Near the crushed skull of Burial 18A were a snow shovel that partially covered the skull and 13 harpoon heads that lay on the shovel and around the skull. A harpoon foreshaft and a bird spear's lateral barb also lay on the shovel. Around the skull were a group of arrowheads, carved items, an awl made from a seal scapula, a mouthpiece for a drill, and two rib fragments. In the stone inventory were five points, fragments of slate tools, a scraper, flakes, a piece of hematite, a pumice fragment, and two sandstone plates (whetstones?).

Burial 19(59) (Fig. 16): Two stones bounded the east side of the burial. Skeleton 19 was missing the right side of the pelvis and the right thigh. Worked bone items were found near the back of the head; ornamented artifacts and a slate-tool fragment were to the right of the skull. A worked bone article, a slate-tool fragment with holes in it, and a piece of another slate tool were near the chest on the vertebrae.

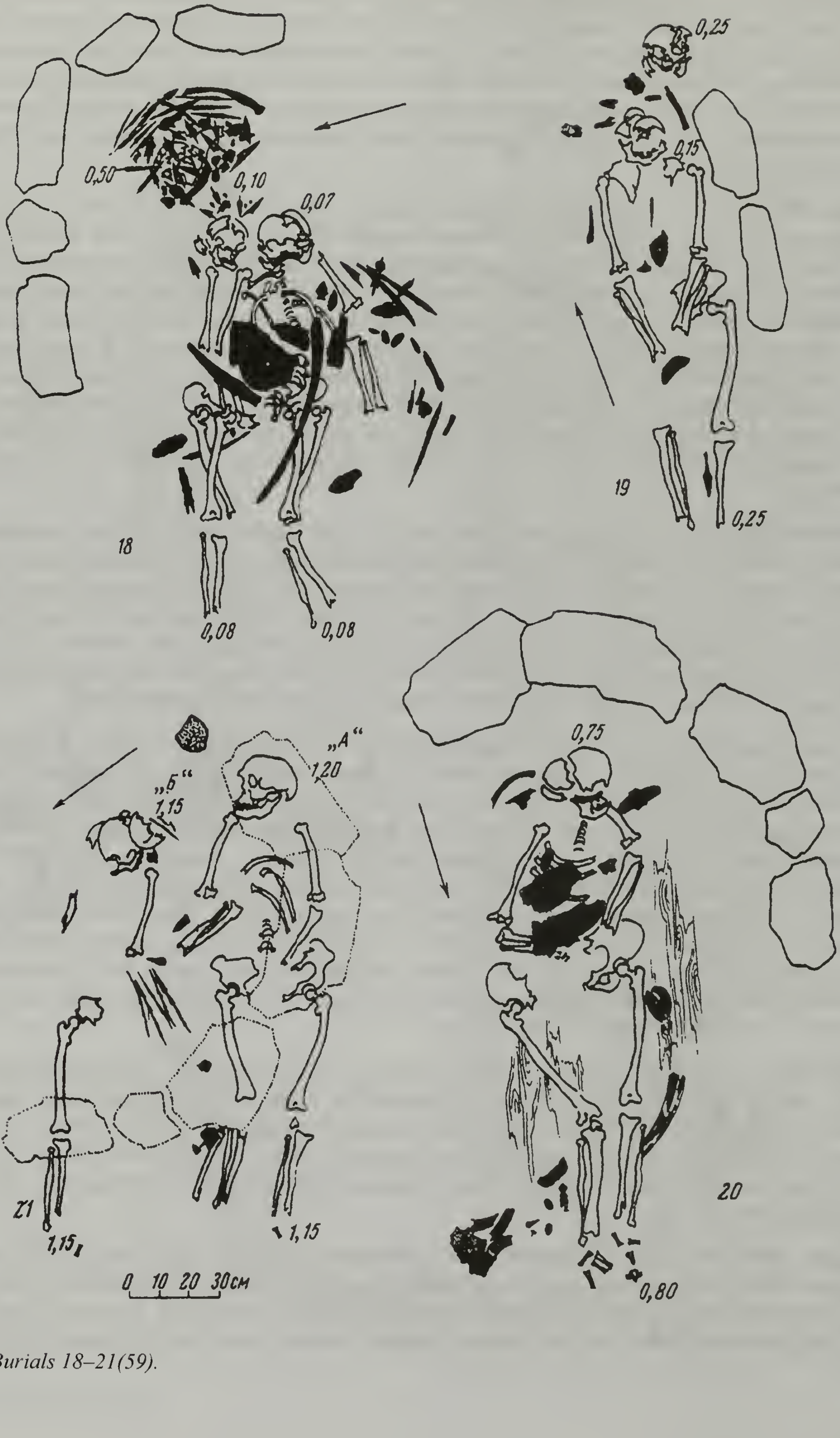


Figure 16. Burials 18–21(59).

To the right of the skeleton were a worked bone item and a trough scraper, and there was an ornamented artifact near the left shin. Fragments of another skull (but no other bones) were found 25 centimeters north of the main skull at a depth of 25 centimeters.

Burial 20(59) (Fig. 16): The south and west sides of the grave were bounded by five stones. The skeleton was in poor condition, and supine, with the crushed skull turned to the left, the mandible broken. The left leg was extended, the right flexed at the knee. The hands met on the left side of the pelvis. There were traces of a wooden floor above and below the burial.

Two worked artifacts were found to the right of the skull; an ornamented article was near the right collarbone; an artifact with zoomorphic images was near the chest; and two miniature bone wedges, an ornamented artifact, a pendant, two buttons, and an anthropomorphic figurine were near the right shin with pieces of pottery farther to the right. A “winged object” was found to the left of the skull; there were two miniature bone rods and a worked article in the pelvis; and near the left thigh were a broken walrus-tusk trough scraper and a piece of antler. A slate blank, a fragment of a slate blade with a hole, and a large fragmented slate knife were located near the abdomen. A woman’s ulu with an ornamented handle lay on the large knife.

Burial 21(59) (Fig. 16): This was a double burial, the chest of Burial 21B being covered by the skull of skeleton 20 and by part of the grave feature. Skeleton 21A’s skull, left-arm bones, part of the pelvis, and part of the right and left femurs were covered by skeleton 20. Skeleton A was supine, the bones in anatomical order but poorly preserved. The skull was on its base and facing north. Skeleton B was also supine. The skull was crushed, and only a shin, a femur, a shoulder bone, and fragments of other bones remained.

A fragment of pottery was found near the skulls. Three worked bone items and a fragment of an ornamented artifact were near skull B. Five arrow points, a flake, and another point were found between the graves. There was a flake was near skeleton A’s right thigh, and a polished slate plate, a stone point, and a fragment of worked bone artifact were near the right shin.

Burial 22(59) (Fig. 17): This was an aboveground grave. Only part of the shoulder bone, left thigh, left shin, and right shin (displaced and lying perpendicular to the left one) remained. Judging by the fragments, the skeleton’s head was oriented to the north. A “winged object” was found near the femoral head; there was a harpoon finger guard near it and a fragmented slate ulu below it. A mattock and an arrow point fragment were near the shin. There was a complex of objects near the displaced shin, including a stone point, harpoon heads, a foreshaft blank, arrowheads, a fragmented plate, a harpoon socket piece, and a worked bone item.

Burial 23(59) (Fig. 17): The bones were poorly preserved. Only the skull was in good condition. The grave was covered with small stones and gravel. There were the remains of wood to the east of the skeleton. Shell fragments, a seal rib, bird bones, and a worked bone item were to the south and east of the skull. Below them were bird bones, and animals’ worked long bones. A fragment of a bird spear point, a carved item, and a bird bone were near the mandible; an arrowhead, part of a boat hook, and two harpoon heads were to the west of the skull. There were two pendants near them, a button below them, and a ring made of walrus vertebra above them. Burins and a slate point were found farther to the west. Many stone grave goods were found near the skull. A burin handle, a walrus-tusk bead, an ornamented pendant, a lateral barb from a bird spear, a bone flake, a worked bone fragment, a blunt arrowhead, and a harpoon head were found to the left of the shoulder. There was a harpoon head with a foreshaft near the elbow and a harpoon head and two fasteners on the left near the chest. There was a worked item near the right shoulder; a harpoon head blank on the shoulder bone; a broken harpoon head near the elbow; and two buttons, a fishing hook, and a fragmented slate knife with a bone dowel near the abdomen; in addition, there was a worked bone item near the right shin.

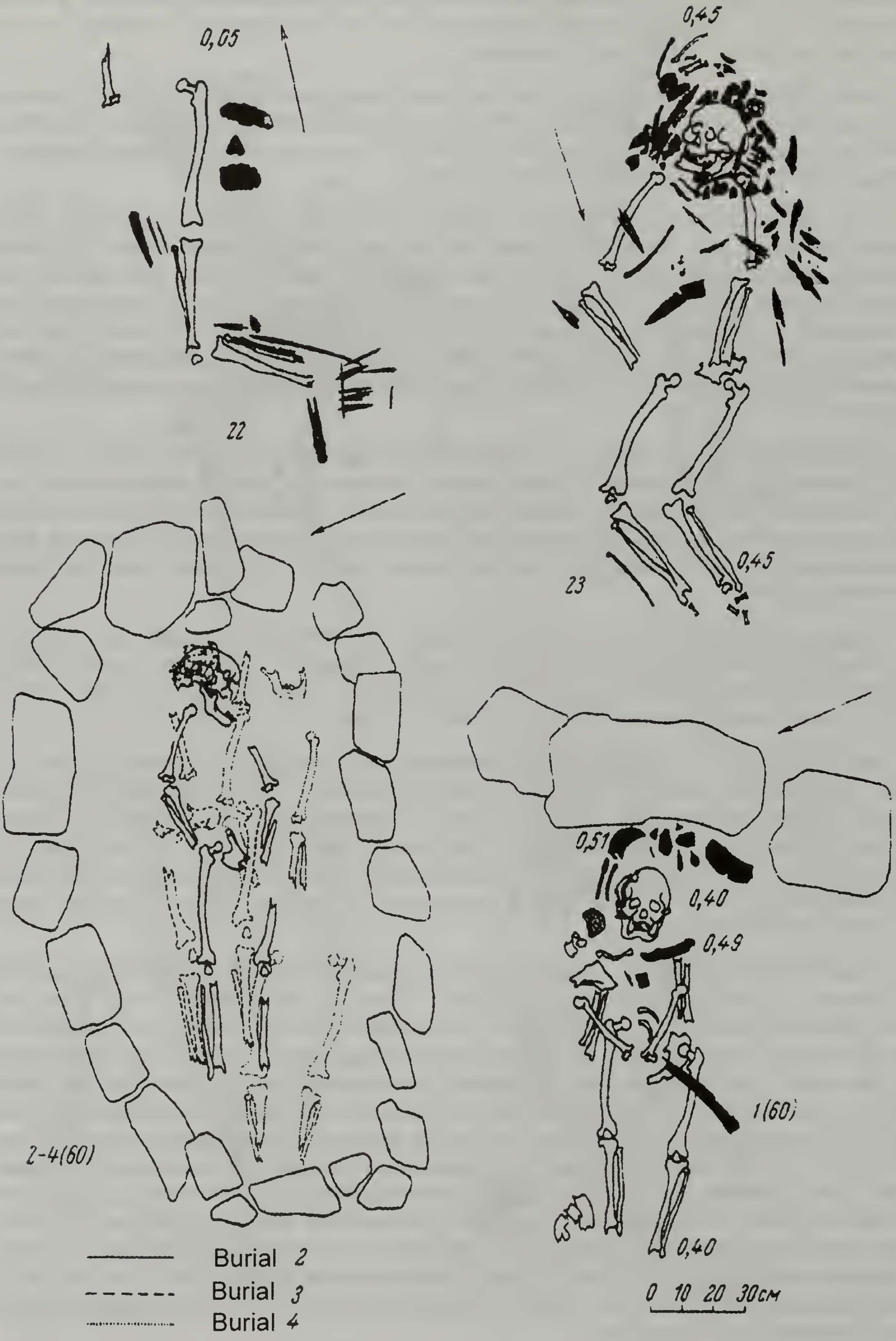


Figure 17. Burials 22(59); 23(59); 1(60); general plan of the skeleton 2–4(60).

Burial 1(60) (Figs. 17, 18): A large stone plate set on its end near the skull bounded the east side of the grave. A smaller stone plate was located south of the first. The skeleton was supine and poorly preserved: the chest and vertebrae were missing. The whole burial had probably moved downhill, since the bones of the upper arms were on the thighbones. The pelvis was fragmented and in poor shape. The skull was on its base and facing west. Fragments of a child's skull were found to the right of the skull. There were fragments of another adult skull near the right foot.

A broken ulu was to the left of the skull; a slate knife fragment, a bone nail-shaped object, a scraper blank, a scraper, an obsidian flake, a broken stone awl, three worked bone fragments, and a broken walrus-tusk trough scraper were near the back of the head; there was a pottery fragment near the right side of the skull. A bone point, a stone scraper, and a pressure flaker handle were near the chest; and there a walrus-tusk mattock was on the left side of the pelvis.

A multilayered complex of burials united by a common stone masonry wall was found in the northern part of the cemetery. The oval wall consisted of large stones. The highest point of the stonework was 0.10 meters down, the lowest 1.05 meters. The following burials were found in this complex.

Burial 2(60) (Figs. 17–19): The grave contained three slate-knife fragments to the right of the skull, pottery fragments near those, and eight nail-shaped objects near the right shoulder. A "winged object" lay on the right shoulder bone. There were two slate spear points nearby, two more slate spear points near the right scapula, and a broken slate spear point and a harpoon head with stone insets near the left scapula. There was a curved walrus-tusk plate near the diaphragm and a slate knife near the right upper arm. Near the left elbow was the fragment of an ornamented artifact. A leister point, a walrus-tusk harpoon foreshaft, a harpoon socket piece, two foreshafts, two worked bone fragments, a broken bone item, and a harpoon head were to the right of the burial, level with the pelvis. There was a zoomorphic artifact below all those items, near the right thigh. Farther down, near the right shin, was a drill mouthpiece. A comb fragment and two pieces of a walrus-tusk trough were between the thighs. There was a bone arrowhead between the knees and a bone fastener near the left knee. Six fragments of a worked walrus tusk and three pieces of ochre were found near the left thigh.

There was a wood imprint (probably the remains of a shaft) in the humus, to the right of the shoulder and knee. Traces of a wooden covering could be found above the burial. There were many walrus bones in the grave: a drilled walrus scapula, probably a snow shovel, lay under the shins; there was a walrus thighbone on the stonework above the right shoulder, and there were several walrus ribs between the stones to the left of the pelvis and under the thighbones.

Burial 3(60) (Fig. 19:3): This grave was located under Burial 2(60) and was separated from it by a layer of soil and decayed wood. The skeleton was supine, the skull fragmented, and the rest of the skeleton in poor condition. The upper arms, hands, and ribs were missing, and the pelvis was crushed. Only the shoulder bones, femurs, and skull remained.

A nail-shaped walrus-tusk object was to the right of the shoulder, and two worked walrus-tusk fragments and a worked bone fragment were to the right of the right elbow. A slate arrowhead and a fragment of seal scapula were found near the chest; there were two fragments of worked walrus tusk to the right of the pelvis; a fragment of a wooden plate was between the thighs; and a slate knife with a hole, a walrus-tusk flake, and fragments of a wooden arrow shaft were found between the knees. A walrus-tusk mattock lay on the shins. A wooden floor could be detected under the burial; it lay on slate plates, which formed the bottom of the grave.

Burial 4(60) (Fig. 19): This grave was found during the excavation of Burial 3(60). Burial 4(60) was beneath and a little farther south of Burial 3(60). The grave shared one stonework wall with Burials 2 and 3. Burial 4(60) was under the latter burials. The skeleton was supine, the bones generally in anatomical order though in poor condition. The shin and upper arm bones were fragmented, and, except for the mandible, the skull was missing.

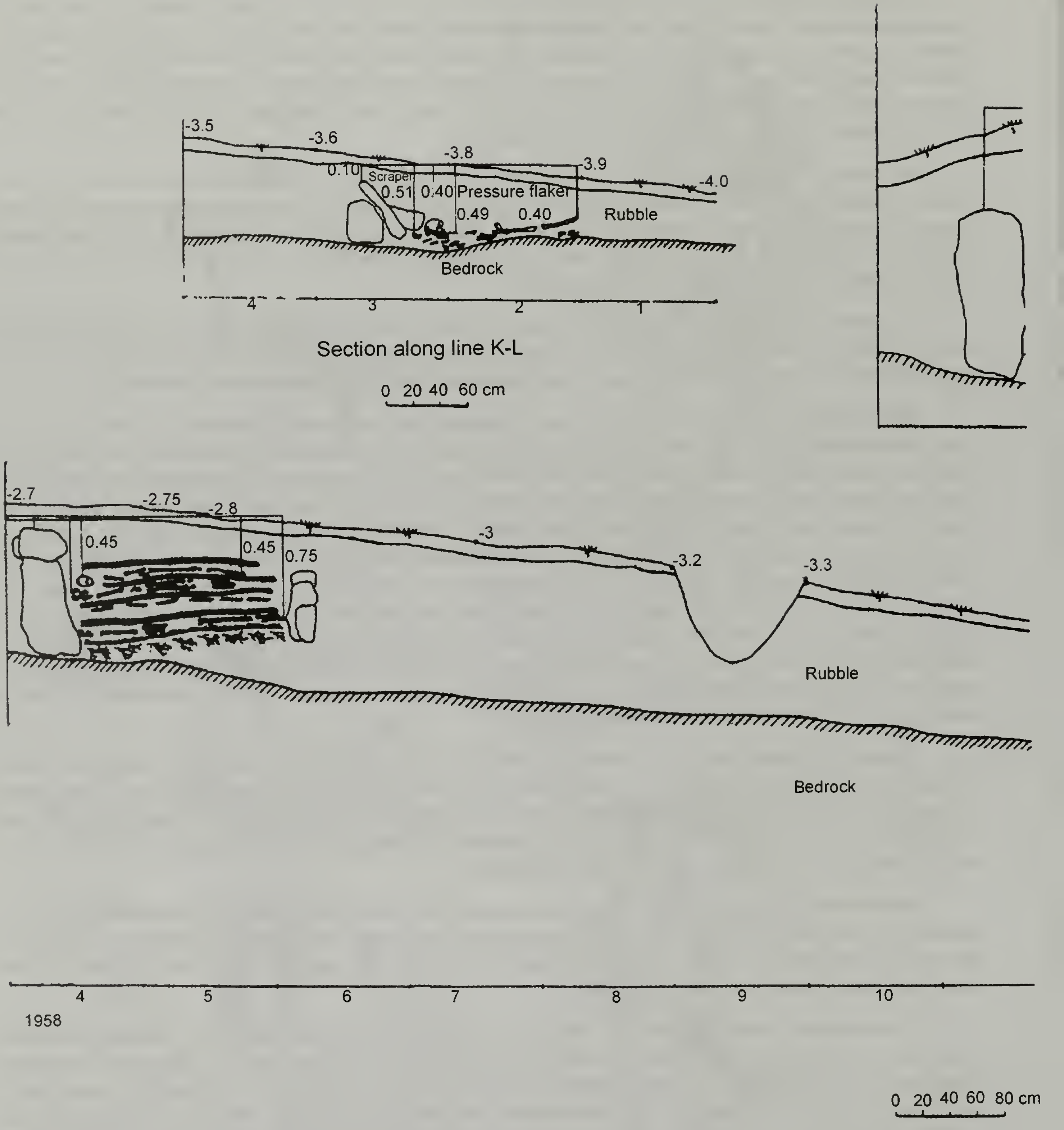
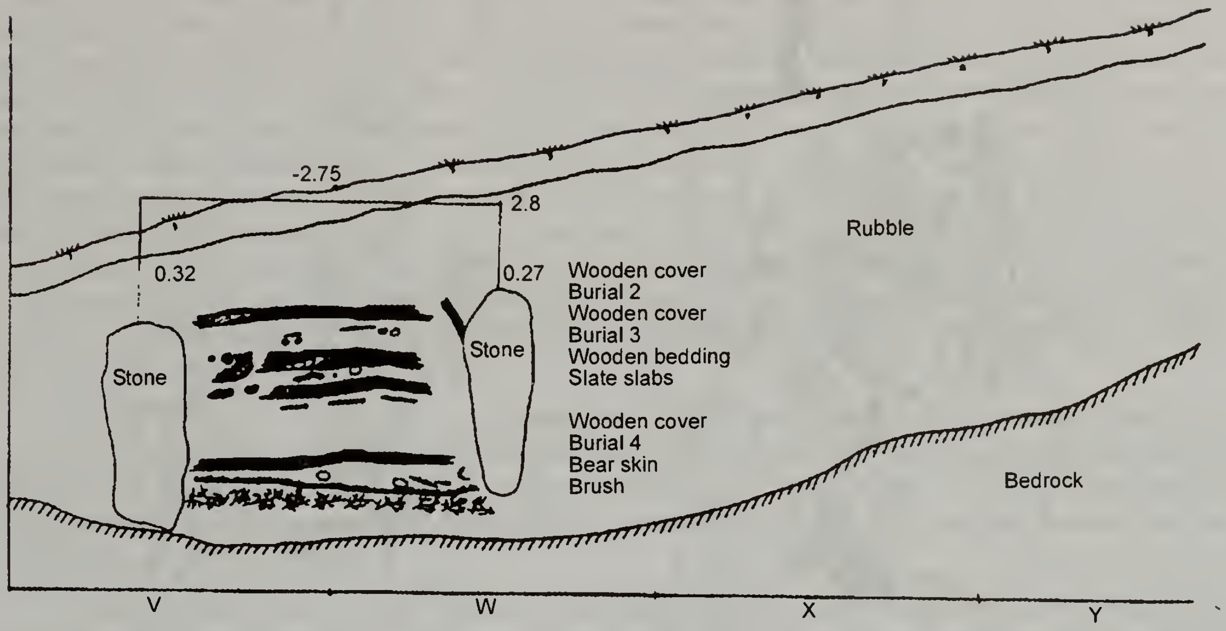
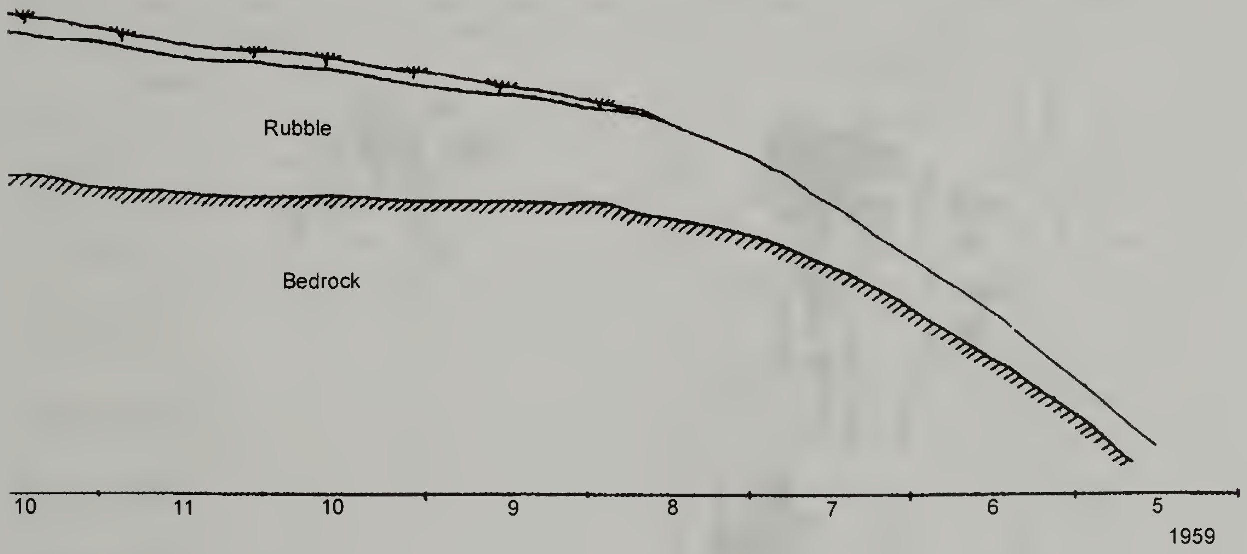


Figure 18. a—longitudinal section of Burial 1(60); cross section (b) and longitudinal section (c) of Burials 2, 3, and 4(60); numbering of the series corresponds to series 11–8 and 25–12 in the general plan.



Section along row 24-25

0 10 20 30 cm



Section along line V-W

0 20 40 60 80 cm

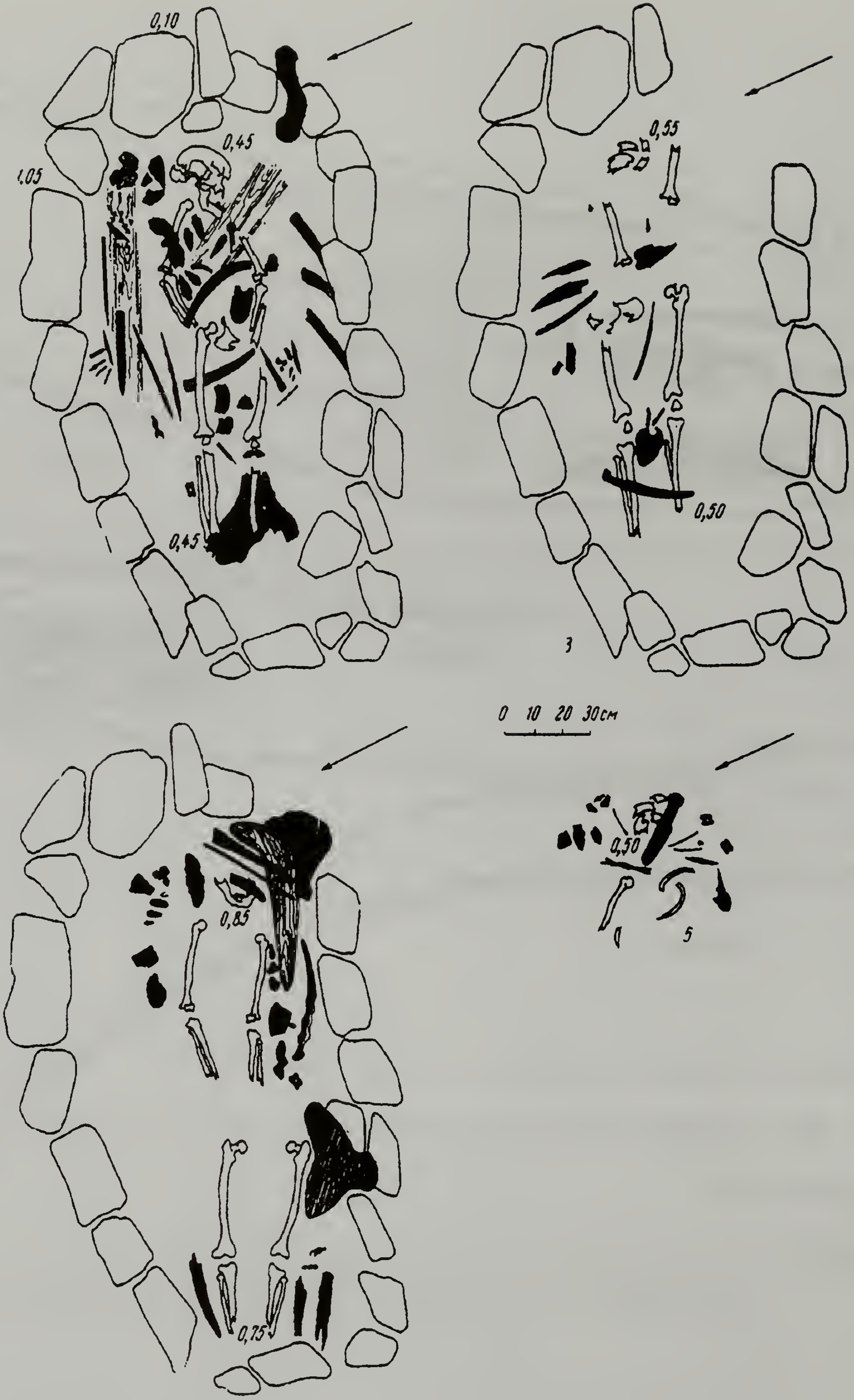


Figure 19. Burials 2–5(60).

Traces of the wooden covering were found above the burial, which was separated from Burial 3 by a layer of soil. A thick layer of decayed bear pelt and brush was under and along the sides of the skeleton, especially in the area of the Burial 4 skull. Various items were found, including an ornamented walrus-tusk plate fragment on the lower jaw, and a "winged object" above. There were three pieces of ochre, two slate whetstones, a spoon-shaped item of walrus tusk, a blunt arrowhead, a walrus-tusk pin, two bone needles, and an oval slate knife near the right shoulder. There was also a walrus-tusk sled runner near the right shin, a walrus scapula snow shovel to the left of the skull, a wooden boomerang-shaped artifact on the shovel, and a wooden adze handle with slits on both sides on the boomerang. Near the left elbow were an obsidian scraper, a scraper made of siliceous slate, a flake with evidence of polishing, two fragments of a slate knife with a retouched arrowhead lying on the largest fragment, and a flake of siliceous slate. A walrus-tusk snow beater lay farther to the left of this group, with a drill mouthpiece nearby. Near the left knee were found a number of walrus-tusk articles, including a pendant (consisting of two rings), a flake, a sled runner, and a harpoon socket piece.

Burial 5(60) (Fig. 19:5). This burial was not far from Burial 4(60). A walrus-tusk mattock was found at a depth of 0.45 meters. Skull, shoulder, and breastbone fragments lay under the mattock at a depth of 0.50 meters. All were in poor condition. The grave contained a walrus-tusk arrowhead, three oblong artifacts, one nail-shaped object, a seal-scapula awl, a worked bone item, two drill mouthpieces, two stone points, an adze, and flakes.

Descriptions of some objects from this complex (harpoon heads, a wooden boomerang-shaped artifact, and the large and unusually shaped slate knife) have already been published (Arutiunov and Sergeev 1961).

Table 1. Statistic Characteristics of the Grave Construction Elements and Their Inventory, 1955.

Burials	**1**	**2**	**Trench oval**
Quads	D-18 D-19	G-20 H-20	—
Depth, feet	-0.57	-0.50	—
Orientation	W	N	—
Harpoon heads	2	2	4
Socket pieces	1	—	1
Knives	—	1	—

Table 2. Statistical Characteristics of Structural Elements of the Graves and the Inventory Found in Them, 1957.

Burial No. **Quads**	**1** **H–34** **H–35**	**2** **G–36** **G–37**	**3** **H–39** **G–39** **G–40**	**4** **G–34** **G–35**	**5** **F–35** **G–34** **G–35**	**6** **I–37** **I–38**	**7** **F–37** **G–37**	**8** **E–33** **F–33** **G–33**
Depth of skull	– 0.17	– 0.15	– 0.15	– 0.17	– 0.65	– 0.25	– 0.20	– 0.17
Depth of feet	– 0.45	– 0.20	– 0.22	– 0.50	– 0.70	– 0.35	– 0.20	– 0.30
Orientation	E	N	E	E	NE	E	N	N
Position*	Back	Back	Back	Back	Back	Back	Back	Back
Pose**	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Fl.
Stone framing	+	—	+	—	+	—	+	+
Bone framing	+	+	+	—	—	+	—	—
Cover	+	—	—	+	—	+	—	—
Flooring	—	—	—	—	—	—	—	—
Harpoon heads	3	—	—	4	1	2	3	—
Foreshafts	3	2	—	1	—	1	1	—
Harpoon shaft heads	—	—	—	—	1	—	—	—
Bolas	14	—	1	2	—	3	—	—
Arrows	—	—	—	—	—	—	—	—
Mattocks	—	1	—	—	—	1	—	—
Knives	1	1	2	1	—	2	1	—
Flakes & tool frags.	—	—	—	—	—	1	2	3
Presence of ceramics	—	—	+	—	—	+	+	+
Wood remains	—	—	—	—	—	+	—	—

*Back = deceased lying on back; Left = lying on left side; Stom. = lying on stomach.

**Ext. = deceased lying extended; Fl. = flexed.

9 **E–33** **F–33** **G–33**	**10** **E–33** **F–33** **G–33**	**11** **E–33** **F–33** **G–33**	**12** **F–39** **G–39** **G–38** **F–38**	**13** **E–32**	**14** **E–32**	**15** **D–32** **D–33**	**16** **C–33**	**17** **B–34**	**18** **D–35**	**19** **D–34**	**20** **C–34** **C–35**
– 0.45	– 0.65	– 0.65	– 0.17	– 0.40	– 0.40	– 0.40	– 0.20	– 0.15	– 0.68	– 0.65	– 0.18
– 0.45	– 0.75	– 0.75	– 0.20	– 0.45	– 0.50	– 0.40	– 0.20	– 0.20	– 0.70	– 0.65	– 0.25
N	N	N	E	N	N	NE	NE	E	NE	S	NNE
Back	Back	Back	Left	Left	Back	Back	—	Back	Stom.	Back	Back
Ext.	Ext.	Ext.	Fl.	Ext.	Ext.	Ext.	—	Ext.	Ext.	Ext.	Fl.
+	+	+	—	—	—	+	—	—	+	—	—
—	—	—	—	—	—	—	+	—	+	—	—
+	—	—	—	—	—	—	—	—	—	—	—
—	+	+	—	—	—	—	—	—	—	—	—
—	2	1	—	—	—	—	—	4	2	2	—
—	1	1	—	—	—	—	—	4	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	1	—	—	5	—	2	—	—	—
—	—	—	2	—	—	—	1	2	1	7	4
—	—	—	—	—	—	2	—	—	1	—	—
—	—	—	—	—	—	2	—	—	—	2	1
2	7	—	—	—	—	2	6	—	—	20	4
+	+	+	+	—	—	+	+	+	—	—	—
—	+	+	—	—	—	—	—	—	—	—	—

Table 3. Statistical Characteristics of Structural Elements of the Graves and the Inventory Found in Them, 1958.

Burial No. Quads	**1 Z–22 A–22 Z–23**	**2 B–23 C–23 B–24 C–24**	**3 D–24**	**4 E–22 E–23**	**5 D–25 E–25 D–26 E–26**	**6 E–24 F–24**	**7 C–26 D–26 D–27**	**8 D–28 C–28**	**9 B–28 C–28**	**10 D–31 D–32 E–31**	**11 A–28 B–28**	**12 B–30 C–30 D–30**
Depth of skull	– 0.35	– 0.70	– 0.30	– 0.60	– 0.30	– 0.72	– 0.45	– 0.35	– 0.35	– 0.25	– 0.30	– 0.45
Depth of feet	– 0.46	– 0.80	—	– 0.75	– 0.35	– 0.65	– 0.50	– 0.37	– 0.40	– 0.40	– 0.43	– 0.50
Orientation	ENE	SW	—	SE	SSE	N	SE	NE	S	NE	SW	NE
Position*	Back	Back	—	Back	Back	Back	Back	Back	Back	Back	Back	Back
Pose**	Ext.	Ext.	—	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.
Stone framing	+	+	—	—	+	—	—	+	—	+	—	+
Bone framing	—	—	—	—	+	—	—	—	—	—	—	+
Cover	—	—	—	—	—	—	—	—	—	—	—	—
Flooring	—	—	—	+	—	—	—	—	—	—	—	+
Harpoon heads	—	—	—	1	4	3	7	—	—	—	—	5
Foreshafts	—	—	—	—	2	—	2	—	—	—	—	3
Harpoon shaft heads	—	—	1	1	—	—	—	—	—	—	—	1
Mattocks	—	—	—	—	—	1	—	3	—	2	—	—
Knives	1	1	—	—	1	—	—	—	—	—	—	1
Flakes & tool frags.	2	—	—	—	8	1	7	—	1	—	—	26
Presence of ceramics	—	—	—	—	—	—	—	—	—	—	—	—
Wood remains	—	—	+	+	—	—	—	—	—	—	—	+

*Back = deceased lying on back.

**Ext. = deceased lying extended.

13 **F–26** **G–26**	**14–15** **E–27** **E–28** **F–27** **F–28**	**16** **D–30** **E–30**	**17** **D–30** **E–30** **D–31** **E–31**	**18** **E–31** **F–31**	**19** **D–30** **E–30** **F–30**	**20** **C–28** **D–28** **C–29** **D–29**	**21** **A–29** **A–30**	**22** **A–38** **B–38** **A–37** **B–37**	**23** **A–33** **A–34** **B–33** **C–34**	**24** **I–19** **H–18** **I–18** **H–19**	**25** **I–18** **I–19** **H–18** **H–19**	**26** **J–18**	**—** **A–4** **A–5**	**Surf.** **Mat.**
– 0.55	– 0.45	– 0.50	– 0.45	– 0.79	–1.20	– 0.50	– 0.75	– 0.66	– 0.30	—	—	– 0.50	—	—
– 0.60	– 0.53	– 0.56	– 0.60	– 0.83	– 1.38	– 0.60	– 0.90	– 0.78	– 0.50	– 0.40	– 0.25	—	—	—
NE	NE	SW	NE	N	N	NE	YE	NE	NE	SE	—	—	—	—
Back	Back	—	Back	Back	Back	Back	Back	Back	Back	—	—	—	—	—
Ext.	Ext.	—	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	—	—	—	—	—
∔	∔	—	—	—	∔	∔	—	—	—	—	—	∔	∔	—
∔	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	∔	∔	—	—	—	—	∔	∔	—	—	—	—	—
∔	—	—	—	—	∔	—	—	∔	—	—	—	∔	∔	—
—	5	—	1	—	—	1	—	17	—	3	—	1	—	6
—	2	—	—	—	—	—	—	2	—	1	—	—	—	—
—	1	—	—	—	—	—	—	—	—	—	—	—	—	—
—	1	—	—	—	—	—	—	—	1	—	—	—	—	1–
—	1	—	1	—	—	1	—	—	—	—	—	—	—	—
—	—	—	1	—	—	1	—	55	—	1	—	—	—	15
—	—	—	—	—	—	—	—	—	∔	—	∔	—	—	—
—	—	—	—	—	∔	—	—	—	—	—	—	—	—	—

Table 4. Statistical Characteristics of Structural Elements of the Graves and the Inventory Found in Them, 1959.

Burial No. **Quads**	**1** **Z–29** **Z–30**	**2** **Z–29** **Z–30**	**3** **Z–29** **Z–30**	**4** **Z–30** **Y–30** **Y–31** **Z–31**	**5** **X–30** **Y–30** **X–31** **Y–31**	**6** **D–9** **D–10**	**7** **J–22** **K–22**	**8** **G–9** **G–10**	**9** **C–8** **C–9** **C–10**	**10** **I–10** **I–11** **J–10** **J–11**	**11** **L–23** **M–23** **L–24** **M–24**
Depth of skull	– 0.90	– 0.73	– 0.78	– 0.72	– 0.72	– 0.40	– 0.25	– 0.60	– 0.54	– 0.58	– 0.18
Depth of feet	—	– 0.55	– 0.60	– 0.70	– 0.69	– 0.62	– 0.27	– 0.65	– 0.18	– 0.42	– 0.20
Orientation	SE	NW	NW	NW	NW	NW	N	SE	SE	E	SE
Position*	—	Back	Back	Back	Back	Back	Back	Back	Back	Back	Back
Pose**	—	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.
Stone framing	+	+	+	+	+	—	—	—	—	+	—
Bone framing	—	+	+	+	+	—	—	—	—	—	—
Cover	—	—	—	—	—	—	—	+	—	—	—
Flooring	—	—	—	—	—	—	—	—	—	—	—
Harpoon heads	—	6	—	2	3	9	6	1	6	2	—
Foreshafts	—	3	—	—	—	2	2	—	—	—	—
Harpoon shaft heads	—	2	—	—	—	2	1	—	—	1	—
Bolas	—	—	—	—	—	—	—	—	—	—	—
Arrows	—	—	—	—	—	15	9	—	—	—	—
Mattocks	—	—	—	—	1	—	—	—	—	1	1
Knives	1	1	—	—	2	3	2	—	1	3	—
Flakes & tool frags.	—	6	—	4	2	27	1	25	2	16	1
Presence of ceramics	—	—	—	—	—	—	—	—	—	—	—
Wood remains	—	—	—	—	—	—	—	—	—	—	—

*Back = deceased lying on back.

**Ext. = deceased lying extended; Fl. = flexed.

12 L–22 M–22	**13 J–23 K–23 J–24 K–24**	**14 I–22 J–22**	**15 E–13 F–13 E–14 F–14**	**16 C–13 C–14 D–13 D–14**	**17 H–13 H–14**	**18 J–13 J–14 J–15**	**19 E–16 F–16 G–16**	**20 E–16 F–16 G–16**	**21 G–15 G–16**	**22 G–19**	**23 I–17 J–17**	**Surf. Mat.**
—	– 0.	—	– 0.	– 0.	– 0.	– 0.	– 0.	– 0.	– 0.	—	– 0.	—
– 0.	– 0.	– 0.	– 0.	– 0.	– 0.	– 0.	– 0.	– 0.	– 0.	– 0.	– 0.	—
NW	NW	N	SE	SE	SE	SE	N	S	SE	—	SW	—
Back	Back	Back	Back	Back	Back	Back	Back	Back	Back	—	Back	—
Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	—	Fl.	—
—	+	+	+	—	+	+	+	+	—	—	—	—
—	—	—	—	—	+	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	+	—	—	+	—
—	—	—	4	6	2	22	—	—	—	4	10	10
—	—	—	3	2	—	4	—	—	—	1	1	8
—	—	—	—	—	—	1	—	—	—	1	—	2
—	—	—	—	—	—	—	—	—	—	—	—	1
—	—	—	27	15	6	11	—	—	7	7	1	4
—	2	—	—	—	—	1	—	—	—	1	—	4
—	—	—	1	—	1	3	1	2	—	1	1	4
—	2	—	3	1	12	24	2	1	3	—	30	50
—	—	—	—	—	—	—	—	+	+	—	—	+
—	—	—	—	—	—	—	—	+	—	—	+	—

Table 5. Statistical Characteristics of Structural Elements of the Graves and the Inventory Found, 1960.

Burial No. **Quads**	**1** **K–9** **K–10** **L–9** **L–10**	**2** **V–24** **W–24** **V–25** **W–25**	**3** **V–24** **W–24** **V–25** **W–25**	**4** **V–24** **W–24** **V–25** **W–25**	**5** **U–25** **V–25**	**Surface Material**
Depth of skull	– 0.40	– 0.45	– 0.55	– 0.85	– 0.50	—
Depth of feet	– 0.40	– 0.45	– 0.50	– 0.75	—	—
Orientation	SE	SE	SE	SE	—	—
Position*	Back	Back	Back	Back	—	—
Pose**	Ext.	Ext.	Ext.	Ext.	—	—
Stone framing	+	+	+	+	—	—
Bone framing	—	+	—	—	—	—
Cover	—	+	+	+	—	—
Flooring	+	+	+	+	—	—
Harpoon heads	—	2	—	—	—	—
Foreshafts	—	3	—	—	—	—
Harpoon shaft heads	—	1	—	1	—	—
Arrows	—	1	—	1	1	—
Mattocks	1	—	1	—	1	1
Knives	1	2	1	2	—	—
Flakes & tool frags.	4	4	—	7	2	1
Presence of ceramics	+	+	—	—	—	+
Wood remains	—	+	+	+	—	—

*Back = deceased lying on back.

**Ext. = deceased lying extended; Fl. = flexed.

Chapter 4

Hunting Equipment in Uelen Cemetery

The hunting weapons found in the Uelen cemetery were well developed and sufficient for the job. First, there were toggling harpoons and auxiliary tools. The construction of the items the early Eskimos used was very similar to that of modern tools that are well known through ethnographic materials and are still used.

An Eskimo named Unuk from the village of Nunyamo made the illustrations in Figures 20 and 21 in 1960. They depict a harpoon with a head, foreshaft, socket piece, shaft, and ice pick. You can also see how the harpoon worked.

Different types of harpoon heads, foreshafts, socket pieces, harpoon rests, and ice picks were found in the Uelen cemetery (all the harpoon parts were of walrus tusk or a similarly dense material, such as antler or bone).

Toggling harpoons heads, socket pieces, and, to some degree, foreshafts differ by construction peculiarities and ornamentation. The differences allow us to find typological characteristics and discern chronological correspondences among the tools. It is very important to provide a typology for toggling harpoon heads because accurately dating this tool is the very basis for dating early Eskimo cultures.

H. B. Collins (1937) made the most precise typological classification of harpoon heads.

In previous papers (Arutiunov et al. 1963), an attempt was made to determine the presence of Collins's types in the material at Uelen cemetery. But the majority of the harpoon heads do not fit into Collins's classification. That is why we had to make a new classification that would include all known toggling harpoon heads.

For that purpose, we created a formula for toggling harpoon heads (the harpoon formula) that, although very short, was sufficient to mark the type and relate all the main characteristics of all basic harpoon elements. The formula begins with a number that indicates the number of line holes. Next comes the indicator for the socket: A for open socket, B for closed. The next number indicates the number of slots for the socket girdle.

The majority of the heads had stone points. Two types of points were used: end blades and microlithic lateral insets. The slot for attaching these can be of two types: parallel or perpendicular to the plane of the line hole. Just as in Collins's typology, we marked the parallel position with the letter X and the perpendicular position with the letter Y. The end blades were indicated by the letter X or Y. Since there can be only one end blade, we did not need a number.

Lateral insets were indicated by a small letter followed by the quantity.

Spurs can be either symmetrical or asymmetrical. Symmetrical spurs had the letter M, asymmetrical the letter P. The number after the letter indicated the number of barbs.

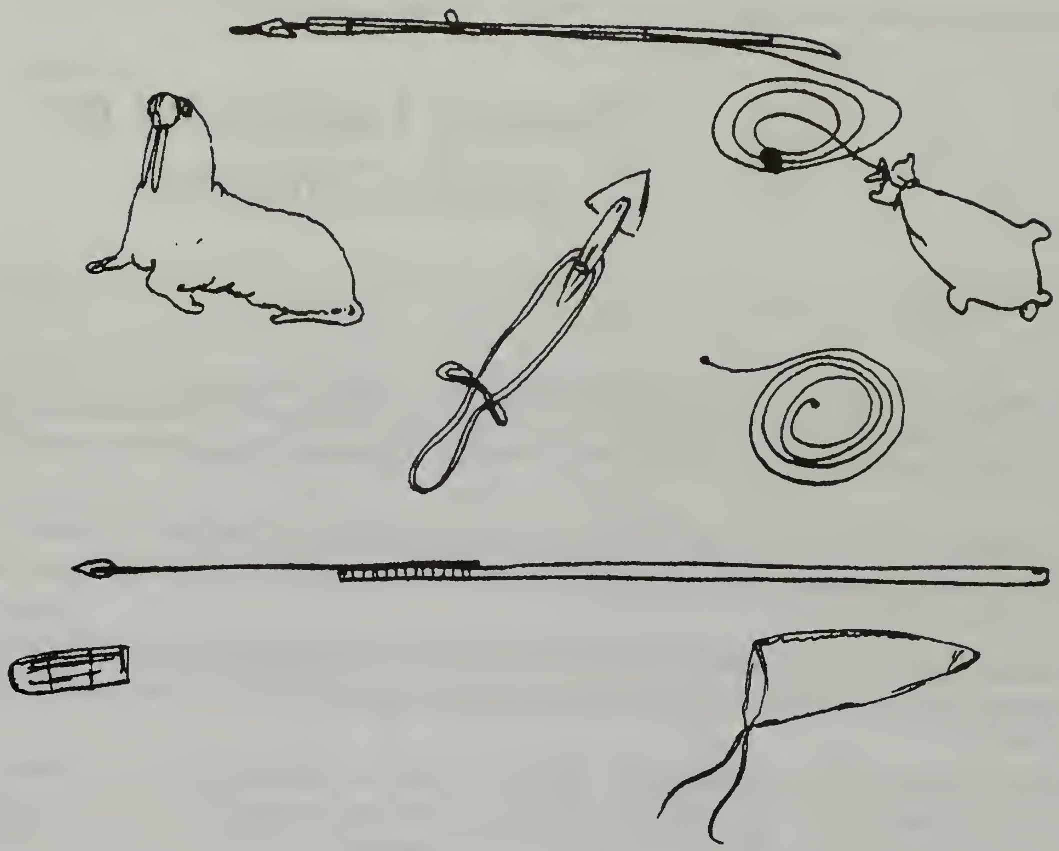


Figure 20. Modern harpoon with all the details (illustration by the Eskimo Unuk).

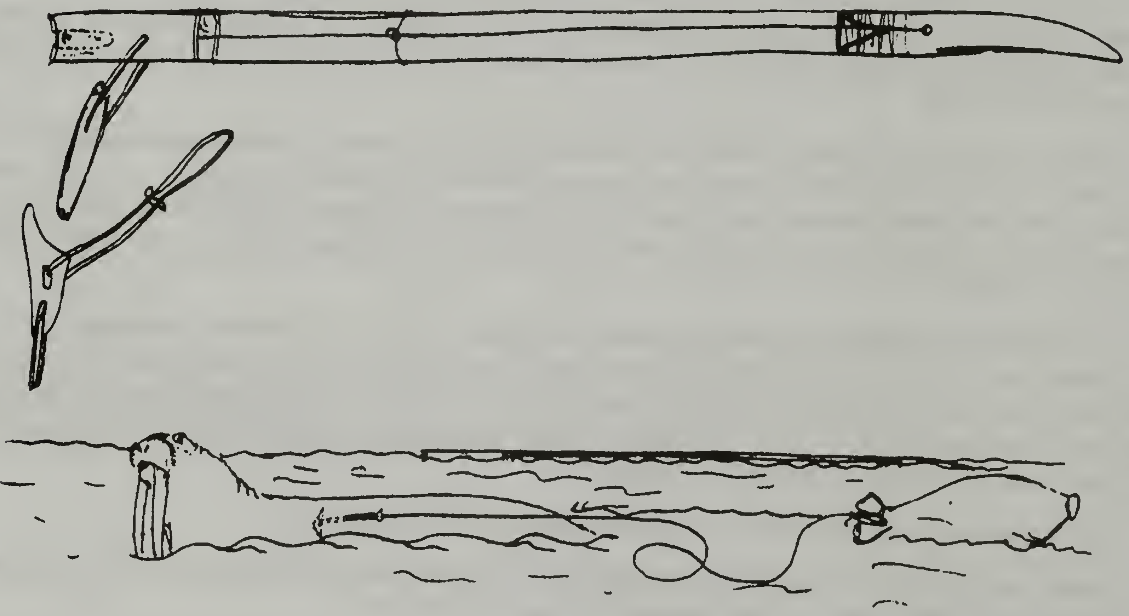


Figure 21. Head of a toggling harpoon in the body of a harpooned animal (illustration by the Eskimo Unuk).

The classic Old Bering Sea-type harpoon head was coded as Ix in Collins's classification and as 2A2x2M3 in our typology. The formula 2A2y2M3 corresponded to Type Iy. Type IIIx had the counterpart 1A2XP.

The rest of the main types and their variations included in Collins's classification could be expressed in our classification with this formula. Another element of the harpoon that can influence the type classification was whether or not it had a barb on the body of the head. Large pointed barbs were marked with a capital C; small barbs that look like notches were marked with a small letter c. The indication of a barb followed the spur characteristics in the formula. The number of barbs was a bracketed figure following the small c. Thus, the Type I(a)y (according to Collins) would become 2A2y2M3c(2–2) in our system. This means the harpoon head has symmetrically placed barbs, two on each side.

Sometimes barbs were placed asymmetrically. For example, the Birnirk-type harpoon head (Ford 1959:232, Fig. 113) or an identical one described in the previous paper (Arutiunov et al. 1963:60, Chart 1b, Fig. 14) was coded 1A1y1PC(0–1). This meant that there was one big pointed barb on the "belly" of the head (1), and that the barb was asymmetrical because there was no barb on the back of the head (0).

Below we give Collins's classification of the main types represented in the Uelen cemetery materials, and we also give the harpoon formula that corresponded to those types:

Collins's Classification	**Harpoon Formula**
Forms with open socket for foreshaft	
Ix	2A2x2M3
Iy	2A2y2M3
IIx	1A1x2P 1A2x2P
IIIx	1A1XP 1A2XP
Forms with closed socket	
IIIx	1BXM3
Vy	1BYM1

In Table 6, we give the formulae for all the harpoons found in the Uelen cemetery, and show their distribution in the cemetery. As you can see in the table, all harpoon heads found in the Uelen are distributed among approximately 30 different types of formulae. That number is very close to the number Collins described in citing materials from five Gambell sites. Of course, not all the types at Gambell were found in the Uelen inventory, and not all the variants found in Uelen had an analogy in Gambell. In general, though, the material is comparable.

While studying Table 6, we can see that all the formulae (and real harpoon heads) fall into four main groups.

The formulae of the first group begin with 2A2 (harpoon heads having an open socket and with two line holes). Three subgroups exist: 2A2x (with insets in the parallel plane), 2A2y (with insets in perpendicular plane), and 2A2c (with barbs but no insets).

The second group has a formula beginning: 1B (harpoon head with closed socket and one hole for line). If one would exclude a small number of harpoon heads without end blades, there could be two subgroups: 1BX and 1BY. It is important to note that there is only one specimen of Type 1BXx (the combination of end blade and lateral insets) and also only one specimen of 1Bx (lateral inset, with no end blade).

Thus, we can say that, for group 1B, end blades are common, and lateral insets are rare. For the first group, 2A2, lateral insets are characteristic.

If there are no lateral insets, there are barbs on the harpoon heads, although three cases of 2A2XM3 were found (end blades with no lateral insets).

The third group is characterized by the formula beginning with 1A (a harpoon head with one hole for the line and an open socket). The group has a great deal of variation, but no variant occurs in large numbers. Variants 1A1XP and 1A2XP have the largest number of specimens and differ from each other only in the number of slots for the girdle.

Harpoon heads of Types 1A2y2P and 1A2x2P (Figs. 25:25 and 35:121) are rarely found and especially interesting.

Harpoon heads of Type 1A2 in the Uelen cemetery can have either end blades or lateral insets. They were found in burials that have harpoon heads of Types 2A2, 1B, and even 1A–C(0–1) (Birnirk). Thus, those heads existed chronologically throughout the entire period of the Uelen cemetery's construction. As far as the harpoon head type is concerned, we view them as a transitional between 2A2 and 1B. Indeed, if we do a cross-section of the harpoon head 1A2 at the level of the girdle slots, the front section would be identical to a similar section of any 2A2 harpoon head (especially those with lateral insets). The rear portion would be very close to the form of 1B's spur. It can be suggested that after one or two barbs broke off of 2A2's symmetrical spurs, the head was again used after the line was fixed only to the front slot. Later, harpoons of this type, with one hole for the line and an asymmetrical spur, were made intentionally. The process of attaching the foreshaft was simplified by decreasing (or even completely eliminating) the slots for the socket girdle; the spurs became almost symmetrical (although in another plane); and, finally, the closed socket for the foreshaft appeared, which signifies the transition to Type 1B.

Thus, we have one more indirect proof that the classic Old Bering Sea forms of Type 2A2x2 and 2A2y2 preceded Type 1A2, characteristic for the Okvik type (or the Uelen-Okvik type, according to Rudenko's terminology).

The fourth and original group is composed of only a small number of harpoon heads. Their formula begins with 1A and ends with C(0–1). The heads with formula 1A–C(0–1) are characterized by a large asymmetrical pointed barb and belong to the so-called Birnirk forms.

Now we will look to see which harpoon heads are associated with each other and which are always found alone (within the borders of one grave).

As we have already noted, the main type in group 2A2 was 2A2x2M3. All the rest of the variations of Type 2A2x accompany and consequently coexist with this type within one chronological period.

Type 2A2x was found in 17 burials. Thirty-four specimens of that type were found, 30 of them belonging to the Type 2A2x2M3.

Type 2A2y was found in 10 burials, and out of 17 specimens, 15 belonged to Type 2A2y2M3.

In 6 out of 10 burials harpoon heads of Type 2A2y2M3 are associated with Type 2A2x2M3.

In the second group (beginning with 1B), Type 1BXM3 was the most numerous. Twenty-two heads of this type were found in 11 burials, which was more than the rest of the heads in that group (three heads without slots for blades and nine other modifications of Type 1BX). In 6 out of 11 cases, Type 1BXM3 was associated with the classic Old Bering Sea Type 2A2x2M3.

Obviously Type 2A2x2M3 and Type 1BXM3 could be considered the most common types and coexisted during the highly developed Bering Sea-Okvik period. That was the epoch of the Uelen cemetery. But Type 1BXM3 (as we have already shown) could have appeared only after the appearance of more archaic types—2A2y2 and 1A2y2. But during the time of the Uelen cemetery, the three types coexisted not only in the same cemetery but in the same households, which is evident because they were placed in the same grave, near one particular individual.

Type 1BXM1 harpoon heads differ somewhat from other heads. The form combined nearly all the harpoon heads of the latest historical period. That form is still used today. Only four harpoon heads of that formula were found at the Uelen cemetery. They did not coincide with other modifications of Type 1BX, though there was one case, Burial 22(58), where two harpoon heads of Type 1BXM1 were found together with four heads of Type 2A2x2M3 and beside one of Type 2A2 (the group typical of the Old Bering Sea period).

We should point out that the harpoon head characteristics reflected in the harpoon formulae do not include all the formal features that could serve as chronological markers. For example, the size of the head, ornamentation, and even the form of the line hole (which at first does not seem very significant) are also very important characteristics. Harpoon 1BXM1 from Burial 22(58) (Fig. 31:75) was large (16 cm) and had an oval line hole (a common features in the Punuk period). In general, the burial should be assigned to the late Old Bering Sea period (because, along with typical Old Bering Sea forms, it contained a 2A2XM3 head that combined the classic forms of Old Bering Sea construction with end blades). The burial is a witness to the transition from the Old Bering Sea period to the Punuk. It is interesting to note that in that burial were three 1A1XP-type open-socketed heads and three 1BYM5-type closed-socket heads. All of those harpoon heads had ornamentation and a form greatly resembling Okvik period heads (Rainey 1941:477, 488, Fig. 6). In Burial 24(58), we see the combination of Type 1BXM1 and 2A2XM3, just as in Burial 22(58). The coincidence of such rare types does not seem to be accidental.

Burial 1(57) had three Type 1BYM1 harpoons, of an ornamentation and size typical of the Punuk period. We see typical Punuk techniques in the forming of the oblong line hole, although the widening front portion of the head, which protects the line as it penetrates the animal's body, was very similar to the Okvik construction. Such construction can be found in harpoon head 1BYM5 from Burial 18(57), where it was found with Type 2A2x2M3. The Okvik-type harpoon head from Burial 18(57) had an ornamental eye on the back similar to the eye on one of the harpoons from Burial 1(57). Thus, in the Uelen cemetery, we can observe the transition from the Old Bering Sea forms to the Punuk ones and see that the Okvik elements coexisted with both types. That gives us one more basis for stating that the Okvik forms did not precede the Old Bering Sea ones, but rather coexisted with them for a long time, even in their last stages.

Large harpoons of group 1B(X and Y) belong to Punuk, and there are similar forms that preceded the Punuk and could be used only for whaling. We have already published the Type 1BYM5 harpoon head from Ekven cemetery (Arutiunov et al. 1963:65, Fig. 2b:6). It was found along with a "winged object" of classic Old Bering Sea appearance. The head was also covered with typical Old Bering Sea ornamentation. The line hole was round, although it had hollows that stretched right out to the spur (to protect the line upon impact). The size of the head (19 cm) (Fig. 22) indicated it was used for whaling, though the line hole's shape and the carved multi-barbed spur indicated a more archaic construction compared to the previously mentioned whaling heads. Thus, the head could be dated to an even earlier time, that is, to the developed Old Bering Sea period.

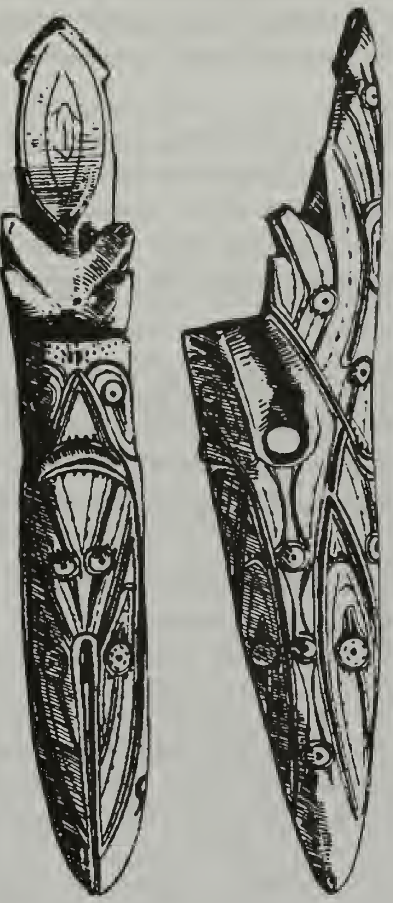


Figure 22 (½ natural size). Harpoon head of Type 1 BYM5 from the Ekven cemetery.

The scarce Type 1A–C(0–1) harpoon heads could be defined as Birnirk. They were found in three burials: 4(57), 6(57), and 17(57). In all of them, they were accompanied by small harpoon heads of Type 1BY. Harpoon heads the type 1BYM1, found in Burials 4(57) and 6(57), have hardly any ornamentation. The 1BYM5 harpoon head from Burial 17(57) was ornamented and, therefore, could be characterized as Okvik. In Burials 4(57) and 17(57), Birnirk forms were accompanied by harpoon heads 1A2XPc(1–1). That type is close to Type II(a)x in Collins's classification, which he dated as early Punuk. In Burial 4(57), we found a head with formula 1A1x2P, which was similar to Type II(c)x (Collins) and which he identified as Punuk.

Therefore, those burials could be characterized as Birnirk, although they had features of the transition to Punuk and also features of the old Okvik.

Harpoon heads 2A2, which were common for the Old Bering Sea period, were not found in the burials with Type 1A–PC(0–1) Birnirk heads. We should also note that all the harpoon heads found in three burials of the Birnirk period graves were small (5–10 cm) and were used for seal hunting.

The village of Uelen is located in the north of the Bering Strait where its waters run into the southern part of the Chukchi Sea. It is a route of walrus migrations. Walrus breeding grounds are not far from Uelen. In higher latitudes, hunting walruses was more difficult: there were fewer animals and the terrain was not as favorable for hunting. That is why people who lived above the Arctic Circle hunted walrus only in the summer. Their main occupation was seal hunting, just as it was for people living at Point Barrow. Therefore, many harpoon heads found there were of the Birnirk type. Objects found in Uelen (harpoon heads, handles, etc.) and made of walrus tusk were made of antler and bone at Point Barrow.

Uelen had enough walrus most of the year. That is why the Birnirk type harpoon heads, which were used for seal hunting, were not very widespread there.

After studying the typology of the harpoon heads from the Uelen cemetery, we can state that the site was "created" over a very long period. For the most part, it belongs to the Old Bering Sea culture, although it had many Okvik features. In the later stages of its existence, some features of the Birnirk culture came to Uelen. In the final stages of the cemetery's formation, the people who had been creating it were gradually developing the Punuk culture.

Now we will raise questions about using stone blades to affixing the harpoon heads. Two types of blades were found: lateral insets and end blades. The technique of using lateral insets is older. The higher the level of harpoon-head development, the fewer lateral insets are found. In the late Punuk and protohistoric period, the end blade was the only stone part of the heads. The stone-working technique of indicated the same phenomena: pressure retouch was an Early Neolithic tradition and was used for the lateral insets. The end blades were ground and sharpened using the Late Neolithic technique. The lateral insets were made of siliceous jasper, and the end blades were made of slate.

As we have already stated, there were two ways to equip the harpoon head with lateral insets: perpendicular to the plane of the line hole (type Y) or parallel (type X). The question is, why do the two methods coexist, and which came first? The material from the Uelen cemetery does not answer this question. Both types had been widely used by the time the Uelen cemetery began to be formed, but we think the Y type is older.

The front portion of head 2A2y2 looks like the blade of a bone dagger that has siliceous insets along the sides. The dagger's insets nearly merge into the shape of the dagger. Such daggers existed in many regions of the world (according to the archaeological record) and are very old (going back to the Mesolithic and Upper Paleolithic) (Rudenko 1947:241). The technique of bone- and wood-weapon construction (with microlithic lateral insets) was widely used in early times in knives, daggers, spearheads, and other cutting and stabbing tools.

The early Uelen people had massive stone spearheads, which are represented in the excavated materials. Also, there were long thin spearheads made of walrus tusk and used for killing walrus at their breeding ground. Spears were also used for killing harpooned walruses and even whales. But before the appearance of such spears—at the start of walrus hunting—long, thin bone heads with microlithic insets were more useful than massive stone spears mounted on a wooden shafts. Such spears were useful for hunting bears, but not for hunting large thick-skinned walruses, because one had to strike a vital organs deep under the fat and muscle.

We think that harpoon heads made according to the y2 technique, used the Mesolithic tradition of microliths, described above. The weapons' small size allowed them to have as few as one pair of insets. But harpoon 2A2y2 had some structural shortcomings. This type replaced old spears when people turned to walrus hunting, first on the ice breeding ground and later in the water. The line was deep in the hole on the back of the harpoon and did not rise above the surface of the harpoon. The line on the "belly" of the harpoon is set differently. It came out of a hole near the spur and went between the foreshaft and the harpoon, but the line coming from the hole in front of the socket came to the surface above the foreshaft, rising somewhat above the body of the head. That created an obstacle for the harpoon as it entered the animal's body and allowed the foreshaft to be knocked out of the socket the moment the harpoon hits the skin.

The construction of 2A2x2 was different from that of the inset knives and spears, although the technique for attaching the stone insets remained the same. The microliths were inserted into the body of the harpoon after the bone was steamed in hot water. After the bone shrank was dried, the insets were firmly fixed in the body of the harpoon.

The cross-section of harpoon head 2A2x2 was more rounded compared to the flattened body of harpoon head 2A2y2. Also, the insets were distinct in the body of the head. Such a configuration made no sense for knives or spearheads, but in harpoon heads the configuration had certain advantages. When entering the harpoon entered the body, the insets on the belly cut a deep furrow in the animal's body, and the thickened and rounded middle part of the harpoon head widened that furrow. In this case, the foreshaft, the line (which covers the foreshaft), and the girdle entered the animal's body unobstructed.

The structural advantage of 2A2x2 harpoon heads explains why there were twice as many harpoon heads of that type than of Type 2A2y2(31 heads of 2A2x2 versus 17 heads of 2A2y2 and three of 2A2x) among the cemetery's materials.

The fact that harpoon heads 2A2y2 were not completely replaced and existed for a rather long time indicates that, along with shortcomings, they had some advantages: they were wide and flat and had the same area of the cross-section as the rest of the heads, and thus required the same or less effort to be thrust into an animal's body. Once inside the body, the heads turned and firmly fixed themselves there because of their wide flat shape, which created resistance to extractive force. The insets were located in the same plane as the wide flat area of the harpoon, thus increasing their resistance.

We have already noted the similarities between harpoon heads 2A2y2 with spears, and daggers with stone insets from the Mesolithic period. On the other hand, parallels could be drawn between Type 2A2M3c harpoon heads and non-toggling harpoon heads of the Upper Paleolithic period. Those were of Type 2A2 without insets, but with lateral symmetrical barbs.

The upper front portion of those toggling harpoon heads was almost the same as that of the non-toggling harpoon heads of the Upper Paleolithic period. It is interesting to note that such non-toggling harpoons were often found in the Aleutian Islands. The Aleuts hunted small pinipeds from baidarkas and rarely used toggling harpoons. The Bering Strait Eskimos hunted walruses from baidarkas and had to use toggling harpoons. They looked for better-constructed toggling harpoons, and many such types were in use among the early people of the Bering Sea coast until at last they developed a final variant of the toggling harpoon—Type 1B(X–Y). The Type 2A2M3c harpoon heads are transitional variants that attempted to combine an early tradition of spear-like non-toggling harpoons with those having a head that turned when it entered an animal's body. But this type, which existed along with Type 2A2x2M3, did not spread. Only five Type 2A2M3c specimens have been found, and they were found only with Type 2A2x2M3.

An easy explanation for there being so few heads of that type in the Uelen cemetery is that, to hunt walrus (which have very thick skin and a layer of fat), they had to cut holes either for side insets or for an end blade. A solid walrus-tusk head of Type 2A2M3c was therefore useless. The bone body of the notched harpoon could not penetrate the animal's body deeply enough and position itself perpendicular to the wound. That is why harpoon head 2A2M3c (16 cm), used for walrus hunting, was the only specimen of that type in the entire cemetery. The other four harpoon heads of that same type were small (only 8–9 cm) and were meant for hunting seal. Sealskin could be easily penetrated with bone harpoons without stone blades.

There were no Type 2A2 harpoons with side barbs and stone insets in Uelen, although Collins described such a head and even gave it a special Subtype, I(a)y. That type would be expressed in our terminology as 2A2x2M3c(2–2).

However, that type turned out to be just a transitional variant on the way to a more adequate form of harpoon head in the Eskimo regions where walrus and whale were hunted. Meanwhile, the Eskimos living to the east of Point Barrow had found its modifications to be useful.

Seal hunting was the main occupation in that region. Birnirk-type toggling harpoon heads and their variants were the most popular toggling harpoon heads. Chronologically, that period was later, starting in the second half of the first millennium A.D. (from the time when the Punuk forms of toggling harpoon heads replaced the Old Bering Sea-Okvik forms. New massive Punuk forms were used for whale and walrus hunting). At the same time, Type 1A–PC(0–1) spread throughout the regions where seal hunting predominated (the north coast of the Chukchi Peninsula up to Cape Baranov). In other words, there was some return and repetition (though on new ground) of the modifications observed in the Old Bering Sea period. During that time, the spear-like Type 2A2M3c toggling harpoon appeared, as did the form that Collins described as Subtype I(a)y, where we find siliceous lateral insets and lateral pointed barbs. The hunters of the Birnirk period returned to that form, but improved it. According to the archaeological material, one lateral pointed barb was enough for seal hunting. A number of harpoon heads of that time are represented by Type 1A–PC(0–1), but the tradition of equipping the harpoon with lateral insets was preserved in the material recovered from the Uelen cemetery. Of four harpoon heads of the classic Birnirk type with a large pointed barb, only one did not have lateral stone insets. Thus, we see that there was a return to the old forms of harpoon heads after the Bering Sea period. Old forms meant pointed barbs (a characteristic of the non-toggling harpoons of the Paleolithic) and retouched stone lateral insets (as used during the Mesolithic). Thus, two techniques that belonged to completely different typologies met in one tool that had been used fairly recently. Those techniques employed a lateral bone barb and a lateral stone inset. We can say that the Birnirk head was, on the one hand, an inset knife and, on the other hand, a leister.

When describing harpoon heads with end blades, we should note that as a result of the development of that form, many variations appeared that reflected the search for the best design.

The combination of an end blade and lateral insets was very rare. Only two such harpoon heads have been found in Uelen Burial 1(55), formula 1BXx2M3 (Fig. 23:5), which had a closed socket; and Burial 17(57), formula 1A2Xy2P (Fig. 26:30).

Not just harpoon heads with closed sockets were equipped with end blades. Harpoon heads with open sockets often had them, too. However, lateral insets were hardly ever found with closed sockets. Only one example of this combination was found in the Uelen cemetery-harpoon head 1Bx2M3 from Burial 15(59). It was accompanied by three harpoon heads of the most numerous of the Type 1B variants (1BXM3). We can say that most of the harpoon heads with a closed socket (Type 1B) had end blades. Besides the already mentioned unusual forms, there were only three harpoon heads in this series that did not use stone. Those were: one Type 1BM1 head from Burial 8(59) (Fig. 35:115), which could have been a blank, and two 1BM3 harpoon heads from Burials 6(59) and 9(59), the latter of which was unfinished (Fig. 35:118); the other was so small that it could only have been a toy or a model (Fig. 34:103).

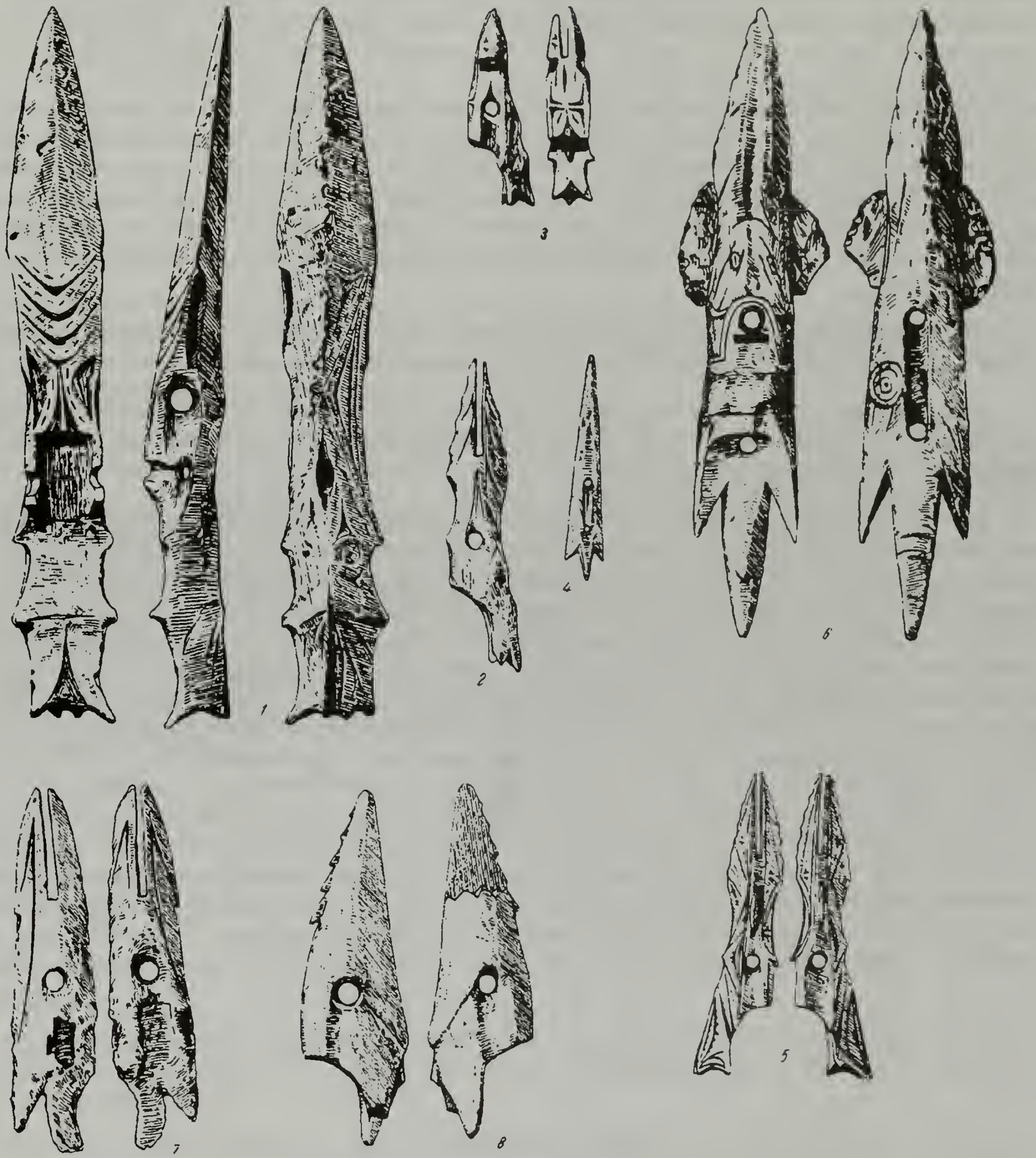


Figure 23 (2/3 natural size). From back dirt of 1955 trench. 1. 1A1X2M; 2. 1BXMZ; 3. 1BYM5; 4. 2AMZ (blank, possibly a toy), Burial 1(55); 5. 1BX x 2M3; 6. 2A2y2M3 (unfinished), Burial 2(55); 7. 1A2XP; 8. 1BYM3 (broken).

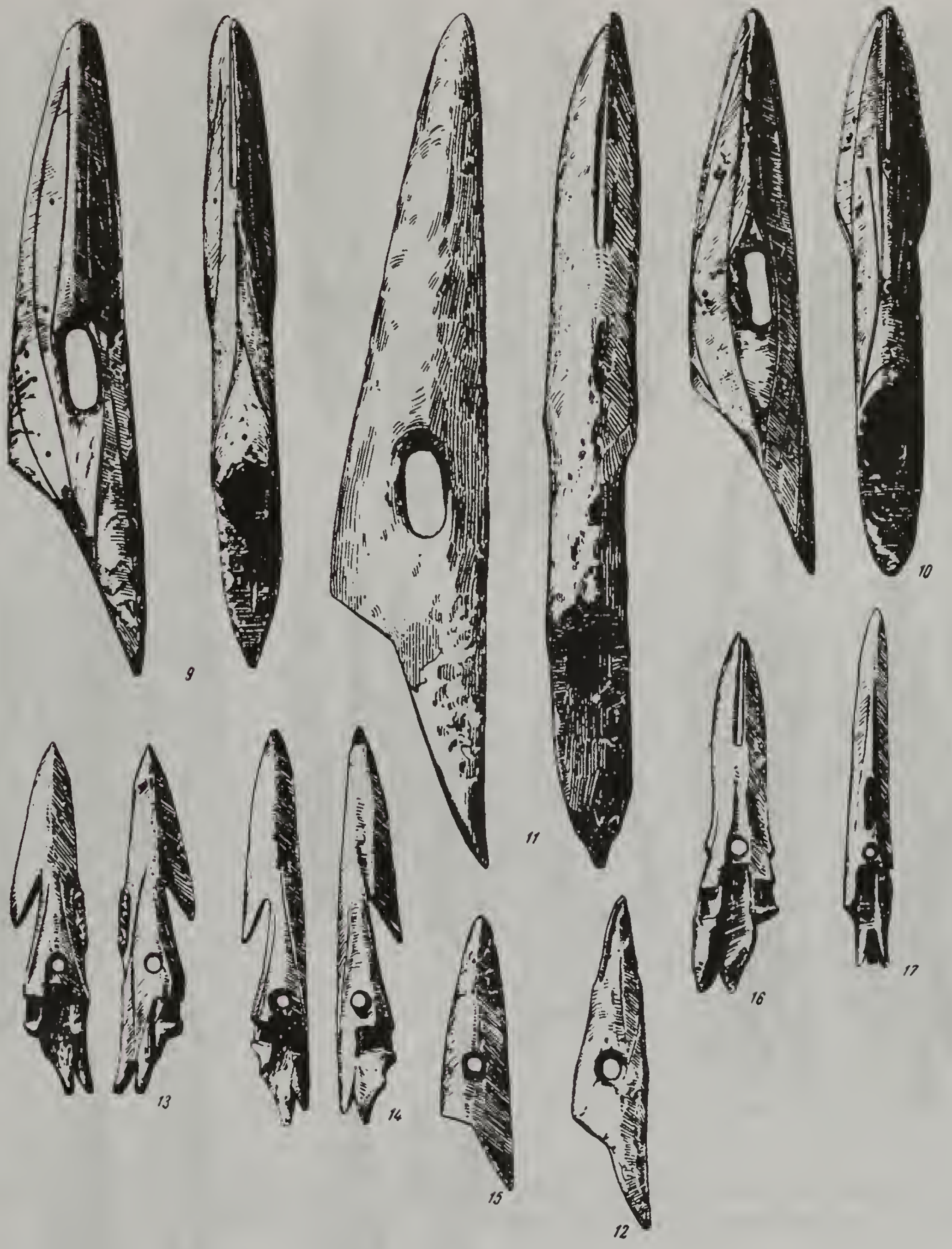


Figure 24 (1/5 natural size). Burial 1(57): 9. 1BYM1; 10. 1B6M1; 11. 1BYM1, Burial 5(57); 12. 1BYM1; 13. 1A1y1PC(0–1); 14. 1A1PC(0–1); 15. 1BYM1; 16. 1A2XPc(1–1); 17. 1A1x2P.

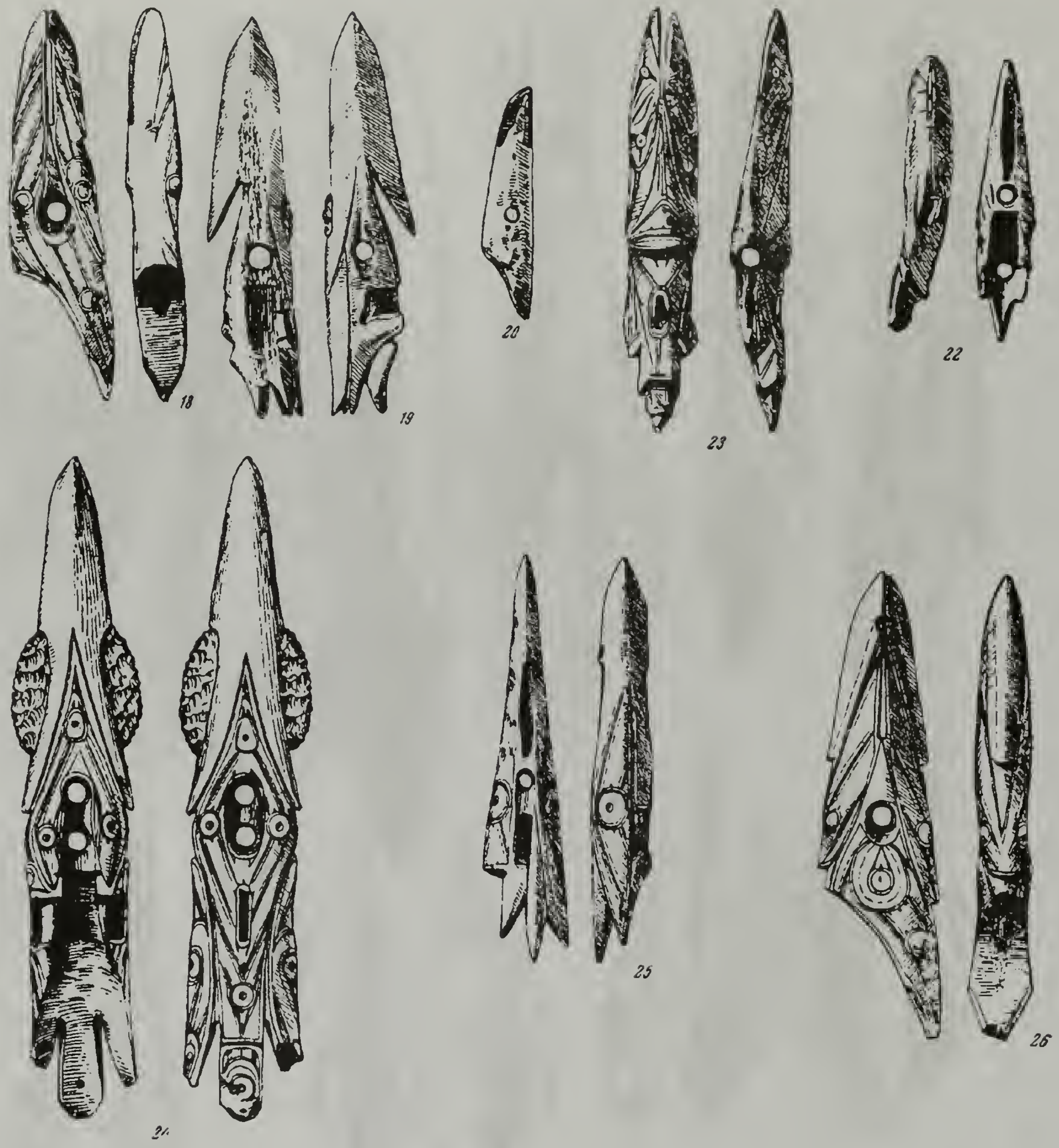


Figure 25 (2/3 natural size). Burial 5(57): 18. 1BXM1, Burial 6(57); 19. 1A1y1PC(0–1); 20. 1BYM1, Burial 7(57); 22. 2A2x2M3; 23. 1A1YM, Burial 10–11(57); 24. 2A2y2M3; 25. 1A2x2P; 26. 1BXM1.

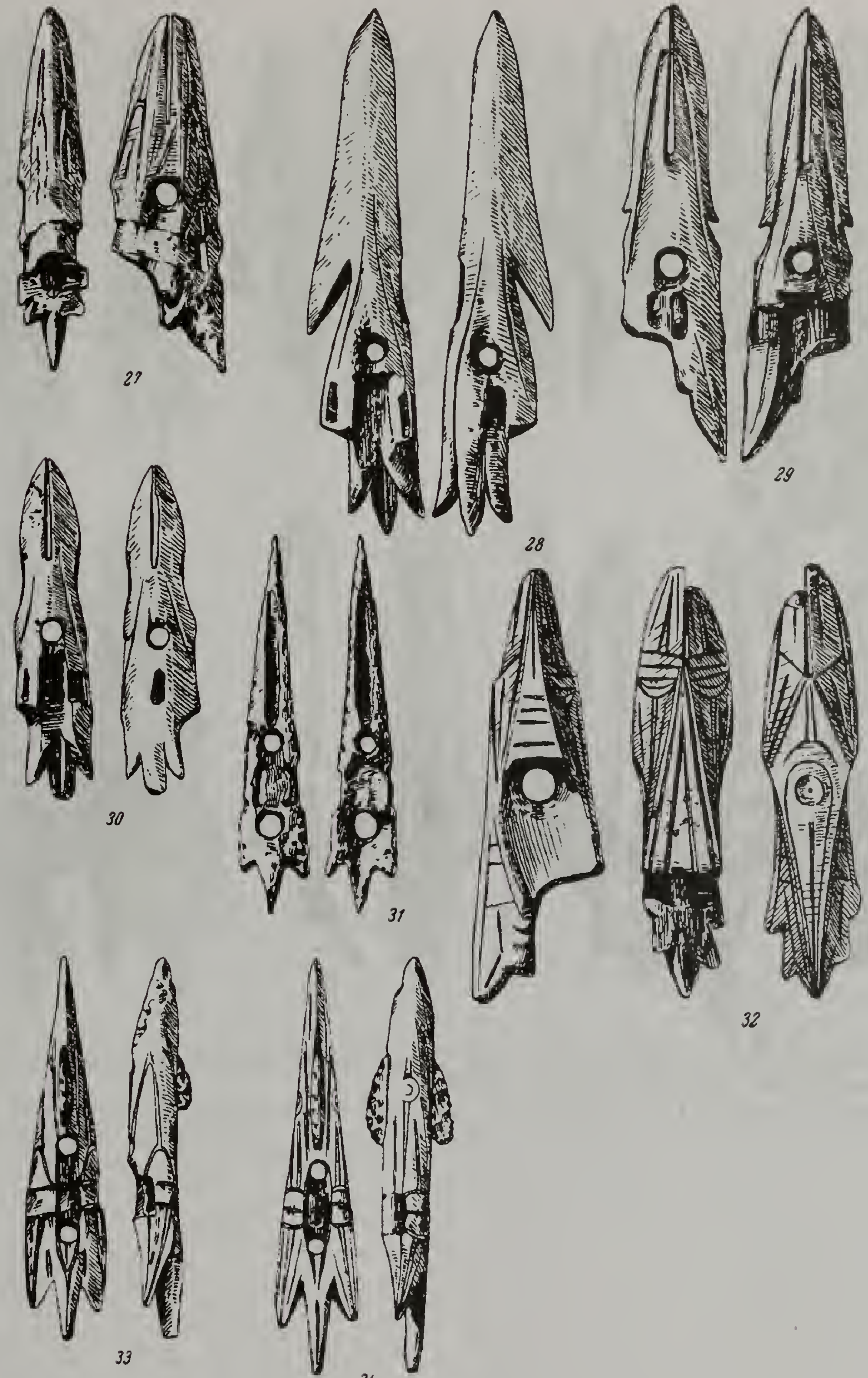


Figure 26 (2/3 natural size). Burial 17(57): 27. 1BXM5; 28. 1A2y1PC(0–1); 29. 1A2XPc(1–1); 30. 1A2Xy20, Burial 18(57); 31. 2A2x2M3; 32. 1BYM5, Burial 19(57); 33. 2A2x2M3; 34. 2A2x2M3.

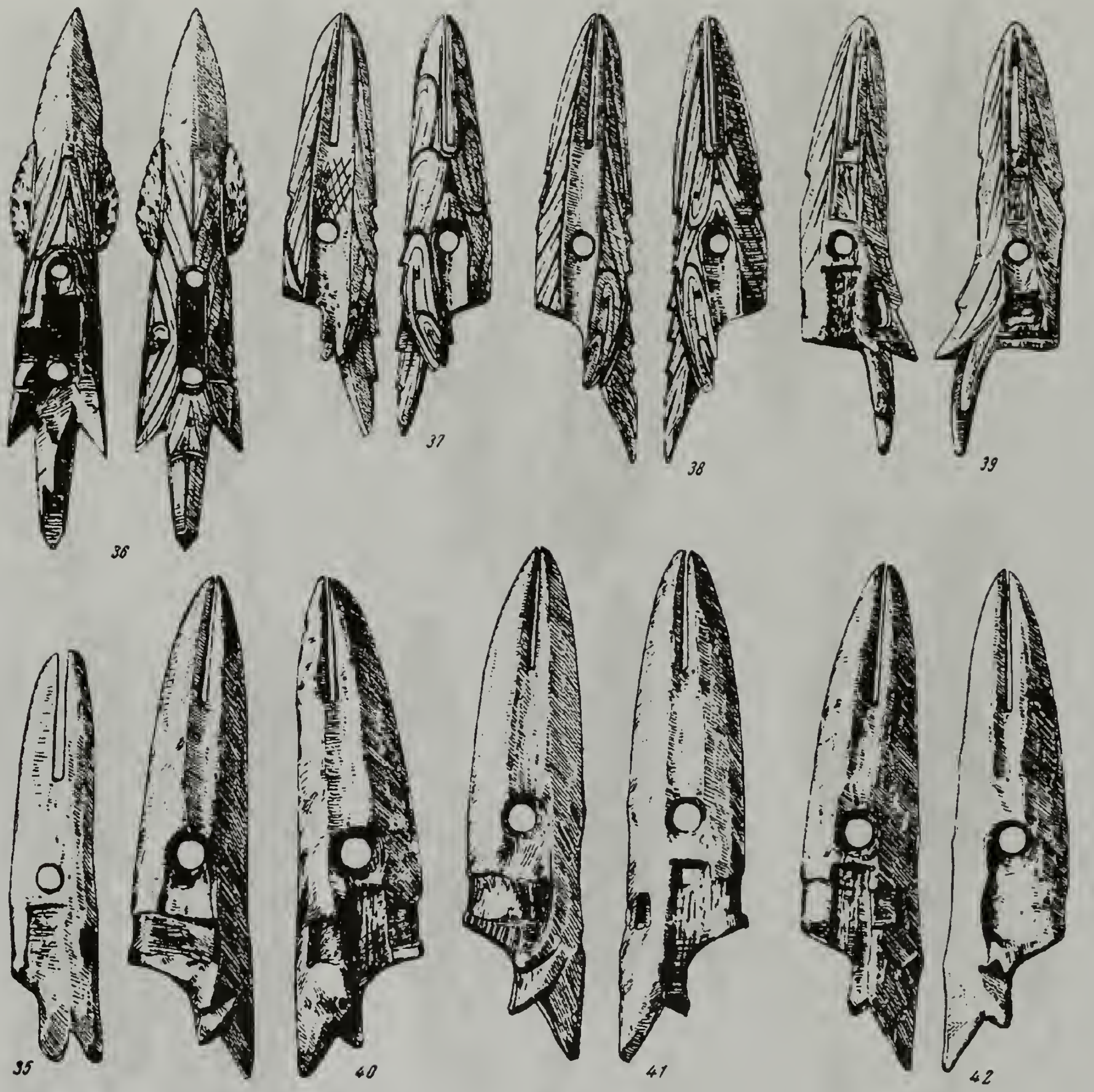


Figure 27 (2/3 natural size). Burial 4(58): 35. 1A2XP, Burial 5(58); 36. 2A2y2M3; 37. 1BXM3; 38. 1BXM3; 39. 1A2XP, Burial 6(58); 40. 1A1XP; 41. 1A1XP; 42. 1A1XP.

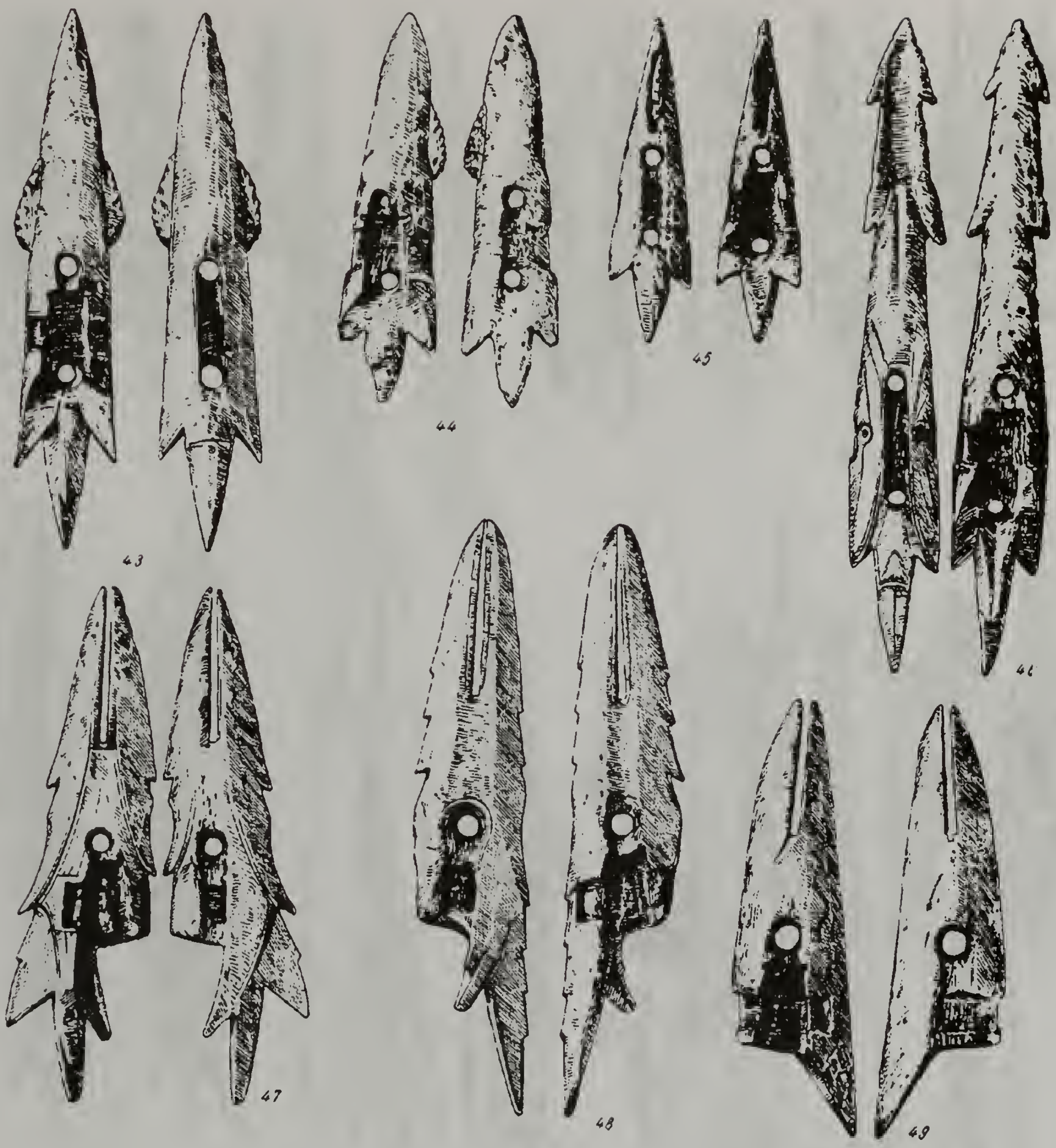


Figure 28 (2/3 natural size). Burial 7(58): 43. 2A2y2M3; 44. 2A2y2M3; 45. 2A2x2M3; 46. 2A2M3c(2–2); 47. 1A2XP; 48. 1A2XP; 49. 1A1XP.

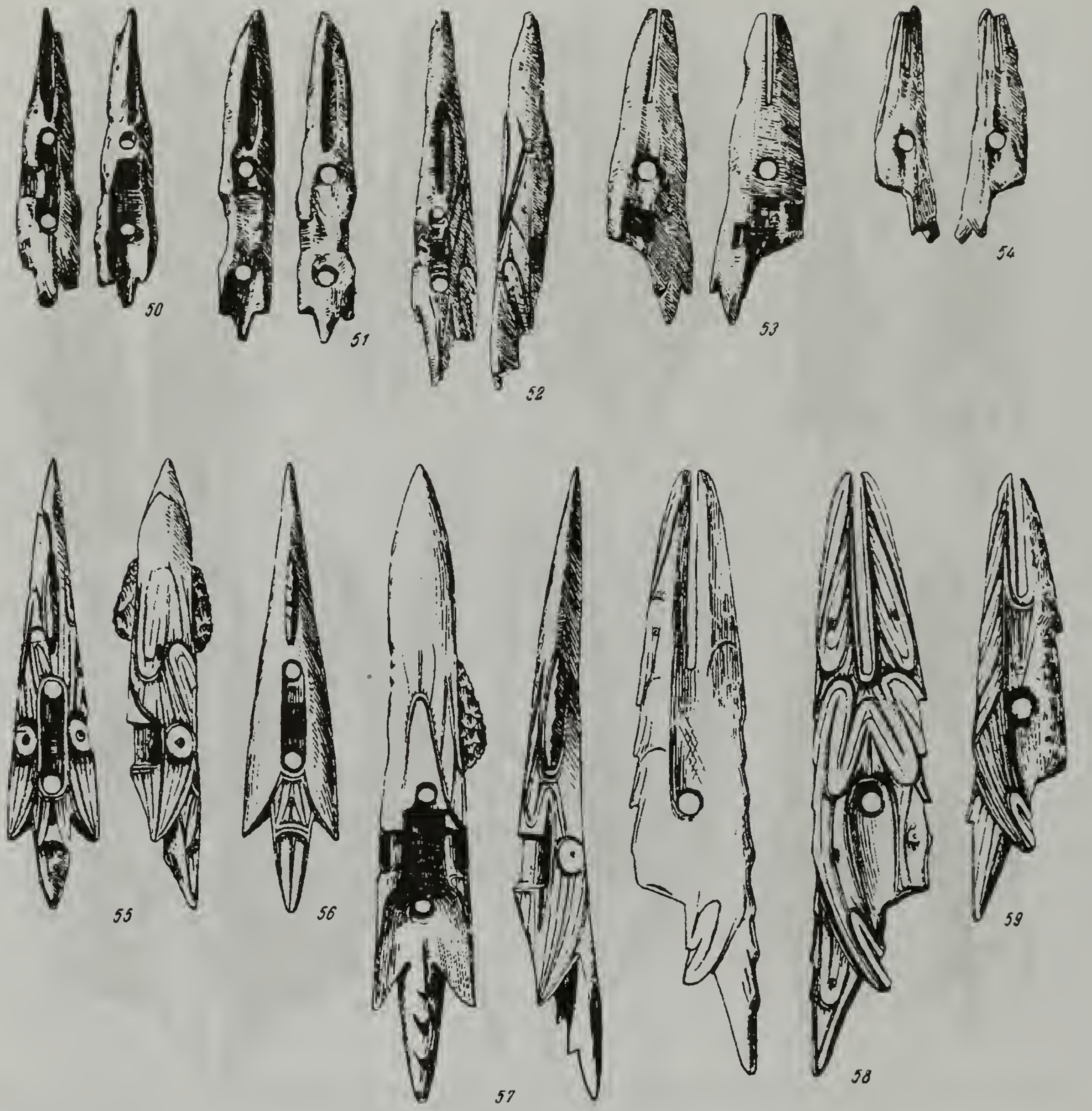


Figure 29 (2/3 natural size). Burial 12(58): 50. 2A2x2M3; 51. 2A2x2M3; 52. 2A2x2M3; 53. 1A2XP; 54. 1BXM3, Burial 14–15(58); 55. 2A2x2M3; 56. 2A2x2M3; 57. 2A2y2M3; 58. 1BXM3; 59. 1BXM3.

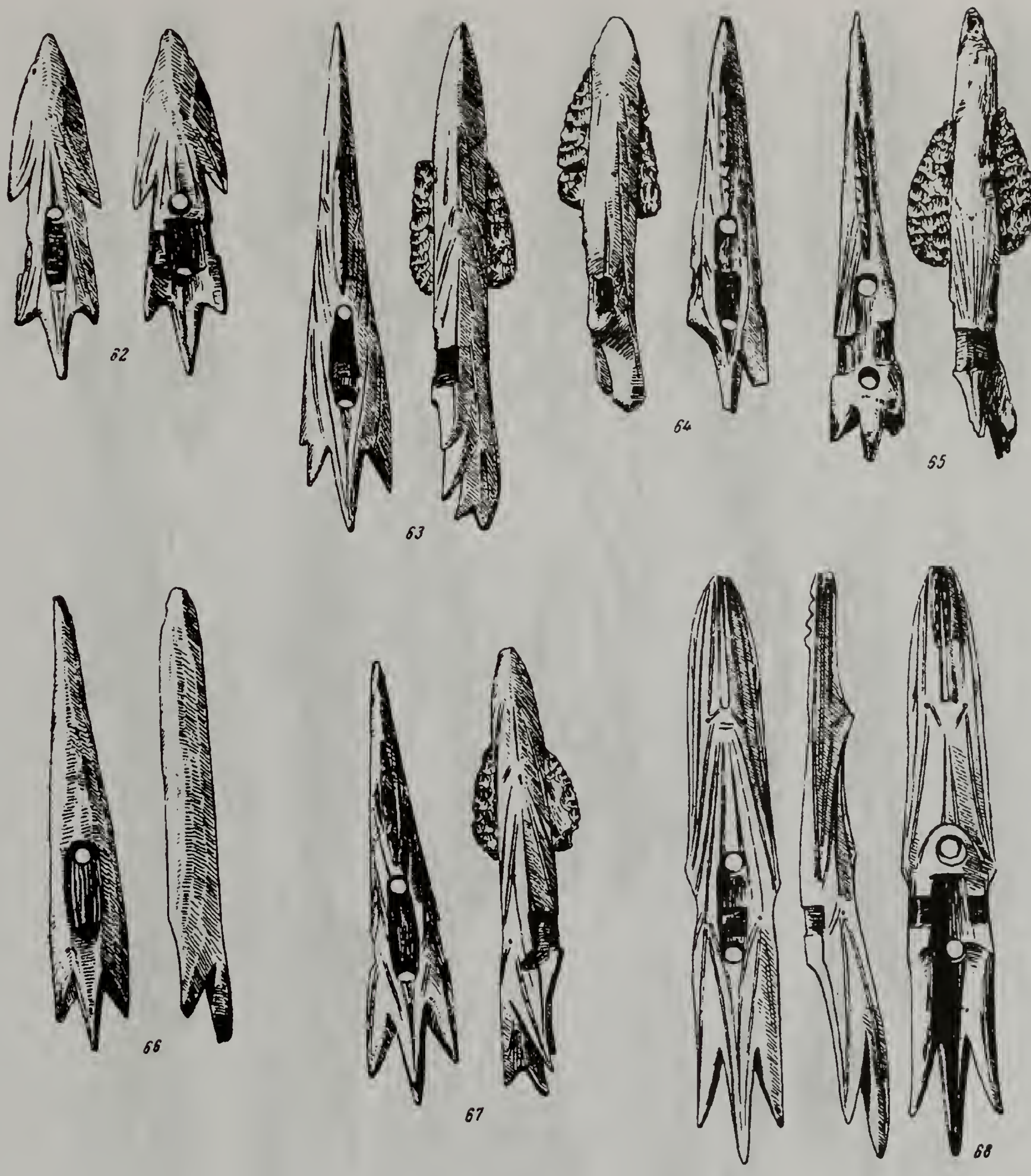


Figure 30 (2/3 natural size). Burial 22(58): 62. 2A2M3c(1–1); 63. 2A2x2M3; 64. 2A2x2M3; 65. 2A2x2M3; 66. Blank; 67. 2A2x2M3; 68. 2AXM3.

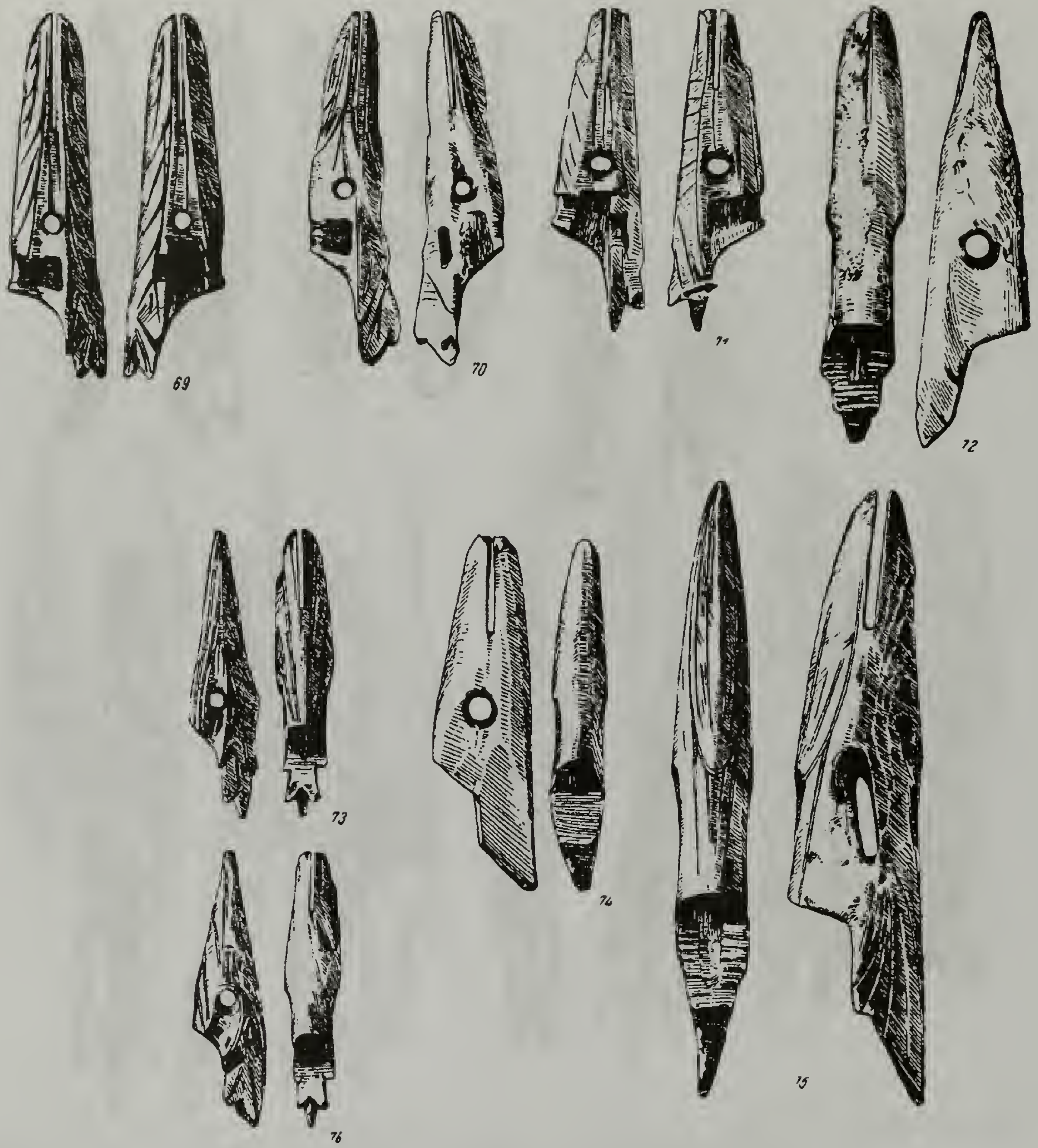


Figure 31 (2/3 natural size). Burial 22(58): 69. 1A1XP; 70. 1A1XP; 71. 1A1XP; 72. 1BYM5; 73. 1BYM5; 74. 1BXM1; 75. 1BXM1; 76. 1BYM5.

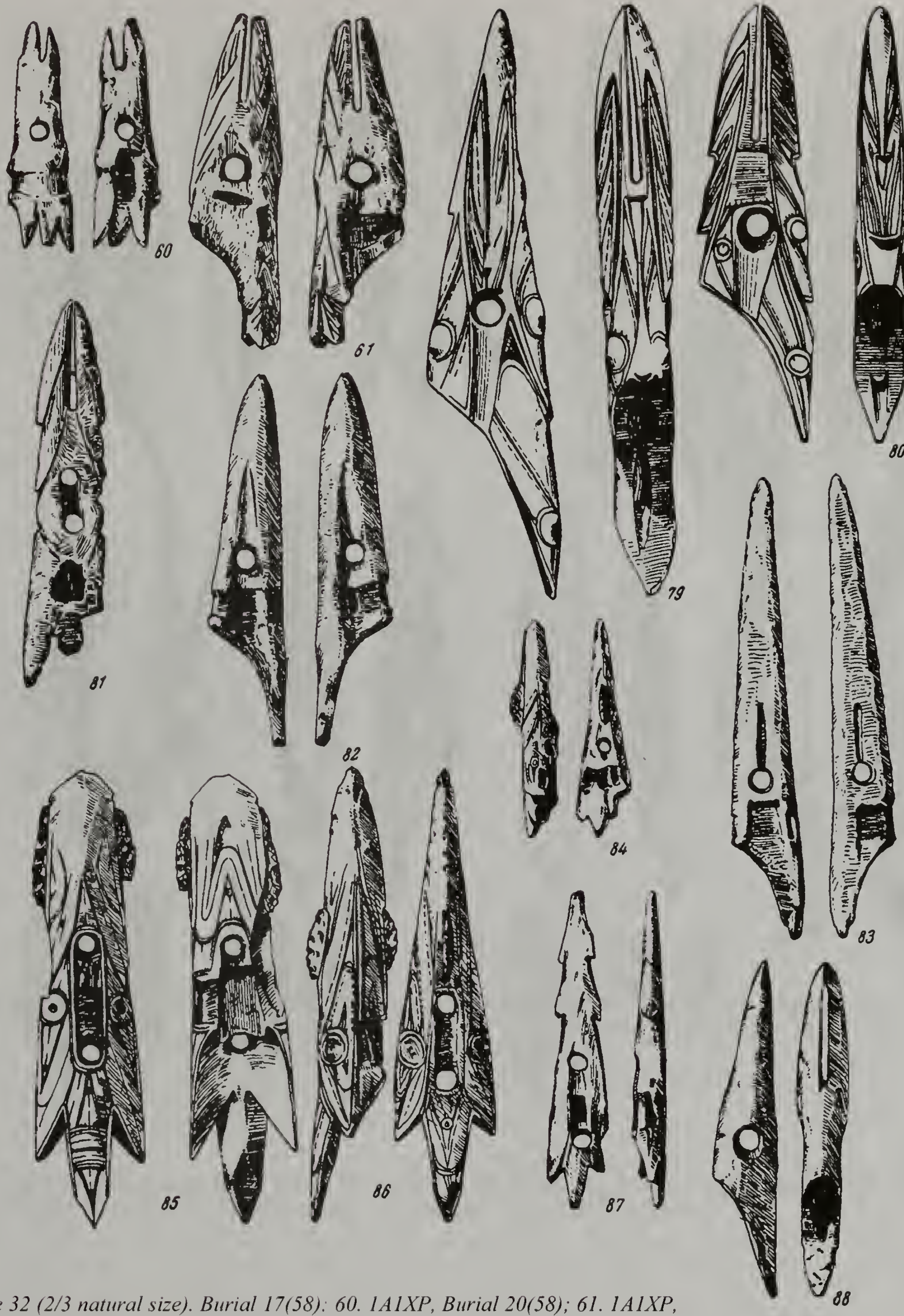


Figure 32 (2/3 natural size). Burial 17(58): 60. 1A1XP, Burial 20(58); 61. 1A1XP, Burial 24(58); 79. 1BYM1; 80. 1BXM1; 81. 2A2XM3, Quad E-6 (1958); 82. 1A1YP, Quad C-6 (1958); 83. Blank, Burial 26(58); 84. 1A1x2P, back dirt of 1955 trench; 85. 2A2y2M3; 86. 2A2x2M3; 87. 2A2M3c(2–2); 88. 1BYM1.

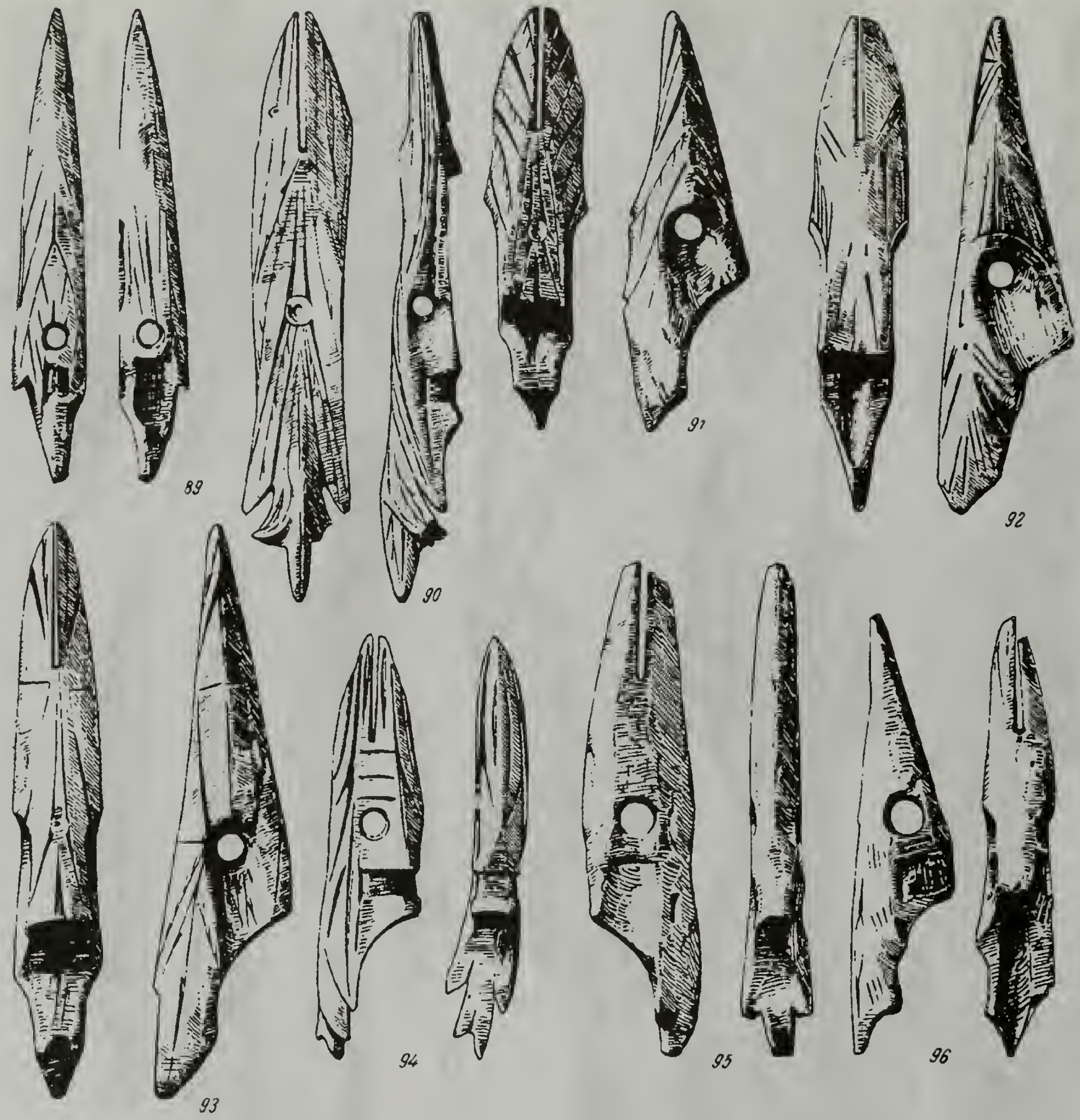


Figure 33 (2/3 natural size). Burial 2–3(59): 89. Blank?; 90. 1A1YM; 91. 1BYM1; 92. 1BYM1; 93. 1BYM1; 94. 1A1XP, Burial 4(59); 95. 1A1XP; 96. 1A1YP.

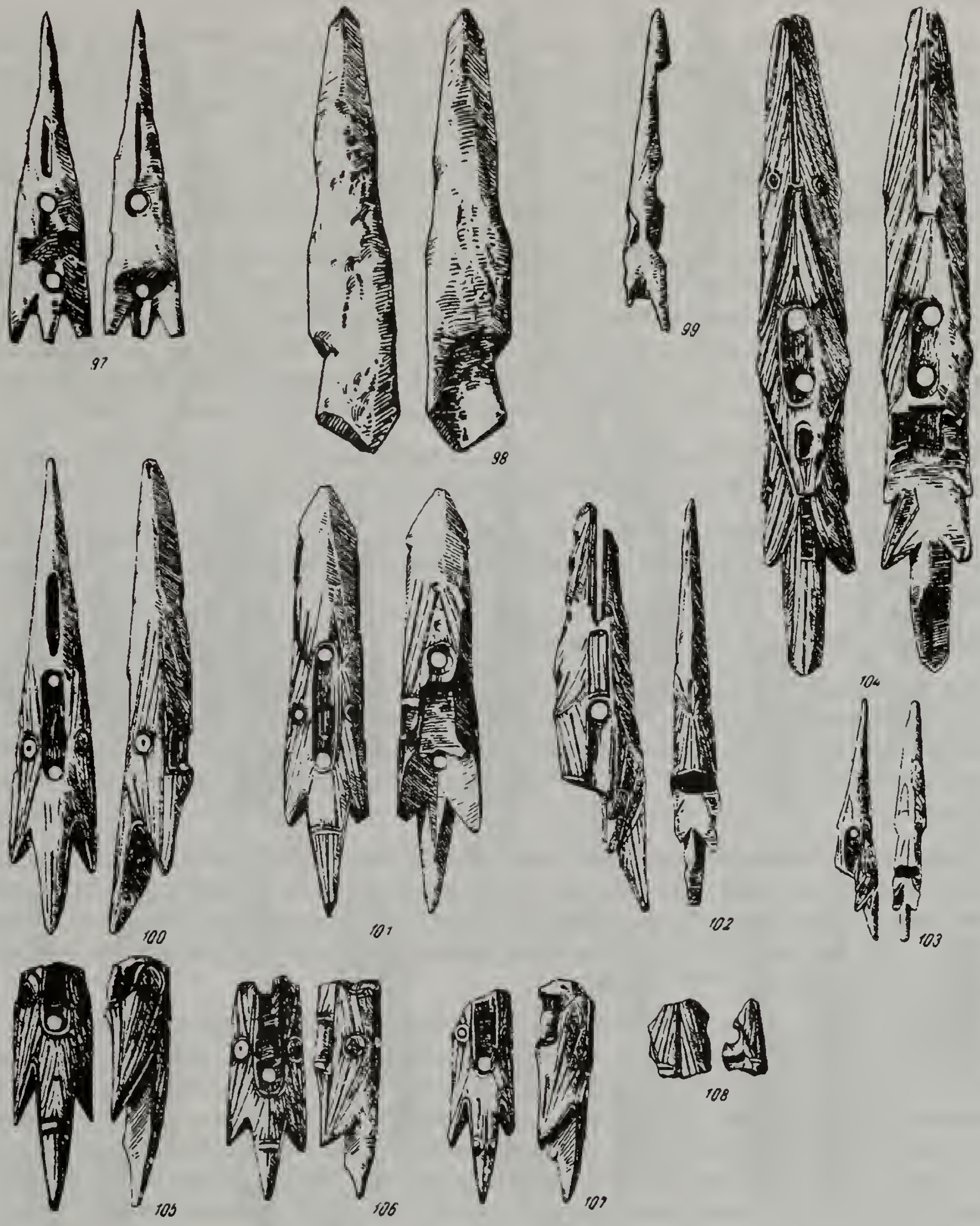


Figure 34 (2/3 natural size). Burial 5(59): 97. 2A2x2M3; 98. Blank; 99. Fragment, Burial 6(59); 100. 2A2x2M3; 101. 2A2y2M3; 102. 1BXM3; 103. 1BM (toy?); 104. 2A2XM3; 105–108. Fragments.

So, we can say that, as a general rule, Type 1B harpoon heads had end blades.

As for the total number of variants X and Y, both were quite numerous,: there being 30 Type 1BX heads and 21 Type 1BY heads found in 25 burials. In five of them, Types 1BY and 1BX harpoon heads coexisted. In 7 out of 25 burials, Type 1BY harpoon heads were found without Type 1BX heads. In 13 burials, Type 1BX harpoon heads were unaccompanied by Type 1BY heads.

The reason why that those two variants (X and Y) coexisted for such a long time could be that harpoon heads with ground slate points have both advantages and disadvantages.

In the case of X, and the case of 2A2, it was easier for the line and socket girdle to penetrate the animal's body. If the socket was open (Type 1A), the cross-section of the harpoon body could be narrower, which prevented its being thicker in front. The thickening of the front part of the harpoon head was always connected with variant Y, whereas in variant X there was either no thickening, or it was weakly pronounced. In Type 1A, we have more cases of X forms because, with the open socket, it was particularly important that the line covering the foreshaft easily penetrate the animal's body.

But in the X forms, the thin and fragile slate end blades would always break while turning inside the animal's body. That was why the variant Y existed until iron blades allowed Type 1BX to dominate.

Since the end blades frequently broke, the technique used to affix the blades was designed to allow their easy replacement. The lateral insets, made of siliceous stone, remained in the sockets of most harpoon heads found, even to the present.

No harpoon heads with an inserted end blade were found in the Uelen cemetery.

End blades were only found only separated from the heads, possibly because the end blades were very fragile and were kept separate, the hunter fixing them to harpoon head during the hunting expedition. According to informants, the deceased had to hunt in the other world and would fix the blades into the heads themselves. That probably explains why end blades not set in harpoon heads were found in the Uelen cemetery.

Blanks and unfinished harpoons found in the Uelen cemetery allowed us to trace the manufacturing process, for example, the order of making slots for the end blade. As we see in Figures 27:39 and 39:165, they first made a wide slot that did not extend to the end of the harpoon. Next they sawed a narrow slit (Fig. 25:18). The end blade to be fixed was tightly squeezed by the ends of that slit and, because of the wider slot, could be easily inserted or removed.

Sometimes end blades were attached to Type 2A2 harpoon heads (though this was atypical). Examples include the Type 2A2XM3 harpoon heads from Burials 22(58), 24(58), and 6(59) (Figs. 30:68 and 34:104). Two of those three heads had small notches (barbs) on one side near the slot for the end blade. Similar barbs were found on the 1BYM3 harpoon from Burial 2(55) (Fig. 23:8) and also near the slots for the end blades of the original and rare 1A1YM harpoon found in Burials 7(57) and 2(59) (Figs. 25:23 and 33:90). Those harpoon heads had some peculiarities, combining a flattened form (as was usual for Type 2A2) and one hole for the line, which was in the same plane as the flattened portion. Harpoon head 1A2x2M (Fig. 23:1) was very similar to these latter heads.

Such rare harpoon heads are witnesses to the search for the most convenient and effective type.

Harpoons with an open socket for the foreshaft also had a baleen or sinew girdle. The girdle tied the head to the foreshaft, which was why all harpoon heads with open sockets had small grooves and slots for the girdle, which are absent on closed-socket heads. But at the Uelen cemetery, we have two closed-socket harpoon heads with such grooves and slots: harpoon 1BXM5 from Burial 17(57) (Fig. 26:27) and harpoon 1BXM3 from Burial 23(59) (Fig. 40:181). We think that their creators were not satisfied with the strength of the socket walls for the foreshaft and decided to reinforce them with a girdle to avoid breakage.

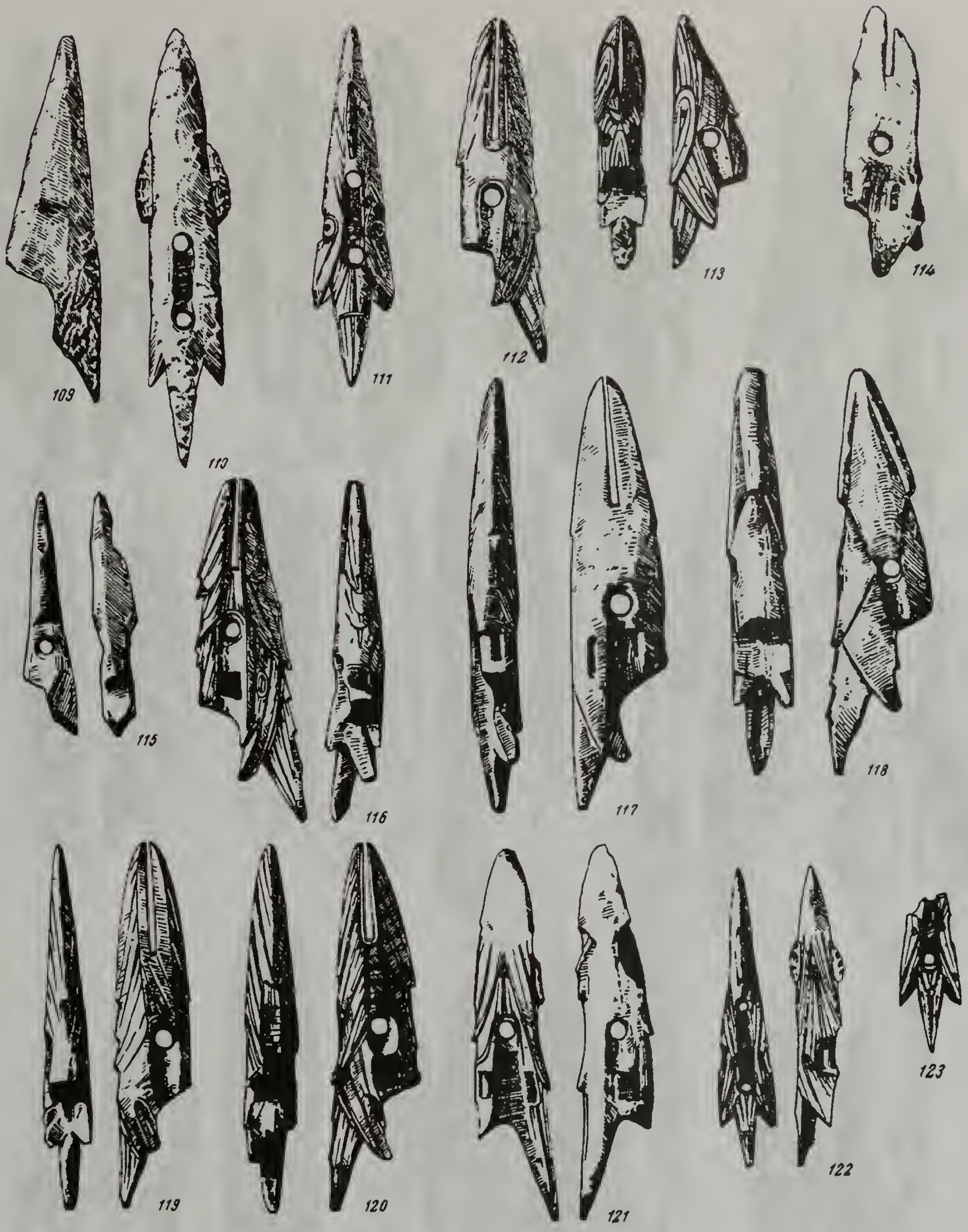


Figure 35 (2/3 natural size). Burial 7(59): 109. Blank; 110. 2A2y2M3; 111. 2A2x2M3; 112. 1BXM5; 113. 1BYM5; 114. 1A2XP, Burial 8(59); 115. 1BM (blank?), Burial 9(59); 116. 1A2XP; 117. 1BM (blank?); 118. 1A2XP; 119. 1BXM3; 120. 1A2XP; 121. 1A2y2P, Burial 10(59); 122. 2A2x2M3; 123. Fragment.

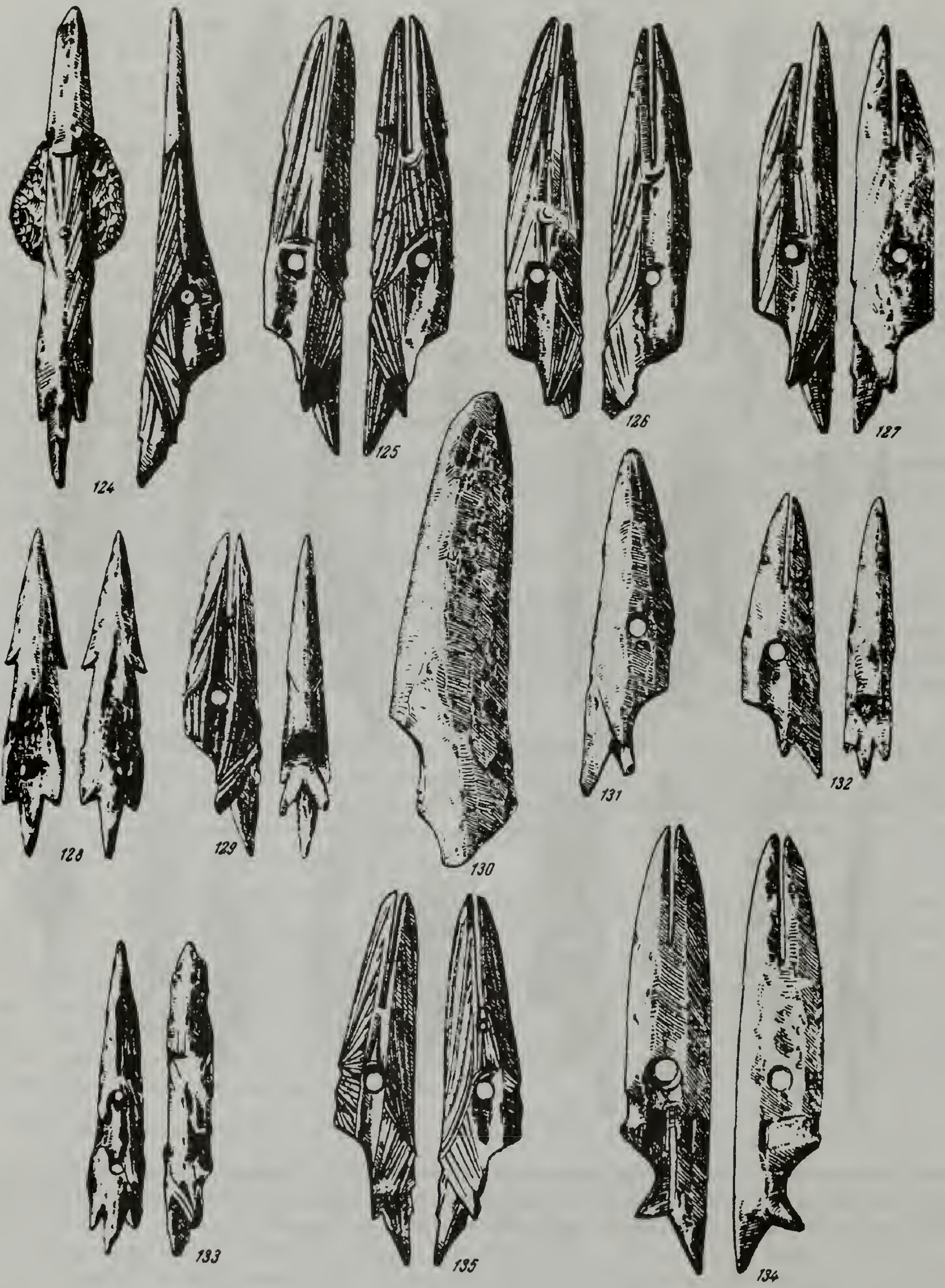


Figure 36 (2/3 natural size). Burial 15(59): 124. 1Bx2M3; 125. 1BXM; 126. 1BXM3; 127. 1BXM3, Burial 16(59); 128. 2A2M3c(1–1) (unfinished); 129. 1BXM3; 130. Blank; 131. Blank; 132. 1BXM3; 133. 2A2x2M3, Burial 17(59); 134. 1A1XP; 135. 1BXM3.

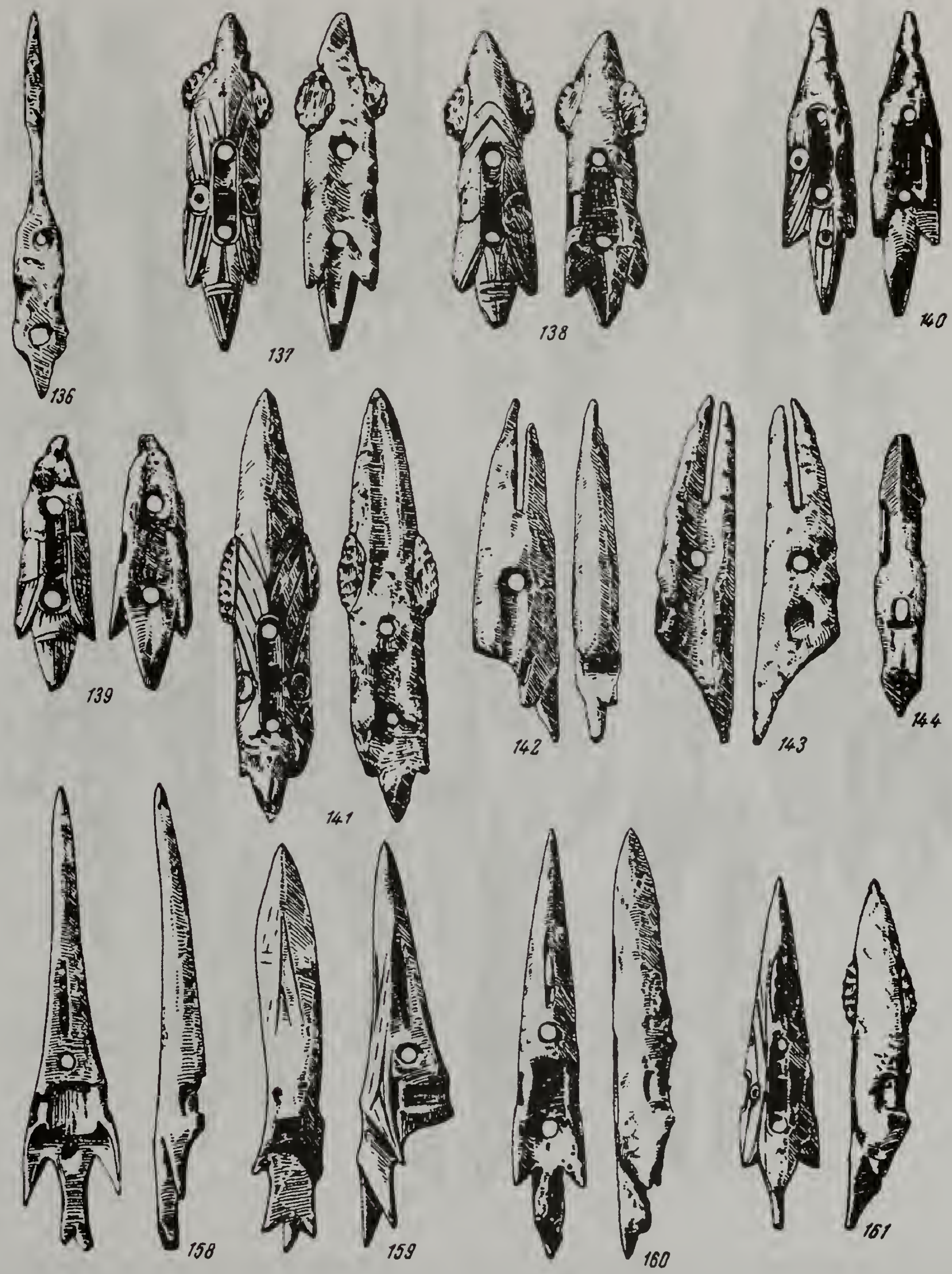


Figure 37 (3/5 natural size). Burial 18(59): 136. Fragment; 137. 2A2y2M3; 138. 2A2y2M3; 139. 2A2y2M3; 140. 2A2y2M3; 141. 2A2y2M3; 142. 1BXM3; 143. 1A2XP; 144. Blank fragment, Burial 22(59); 158. 2A2x2M4; 159. 1A1x2P; 160. 2A2x2M3.

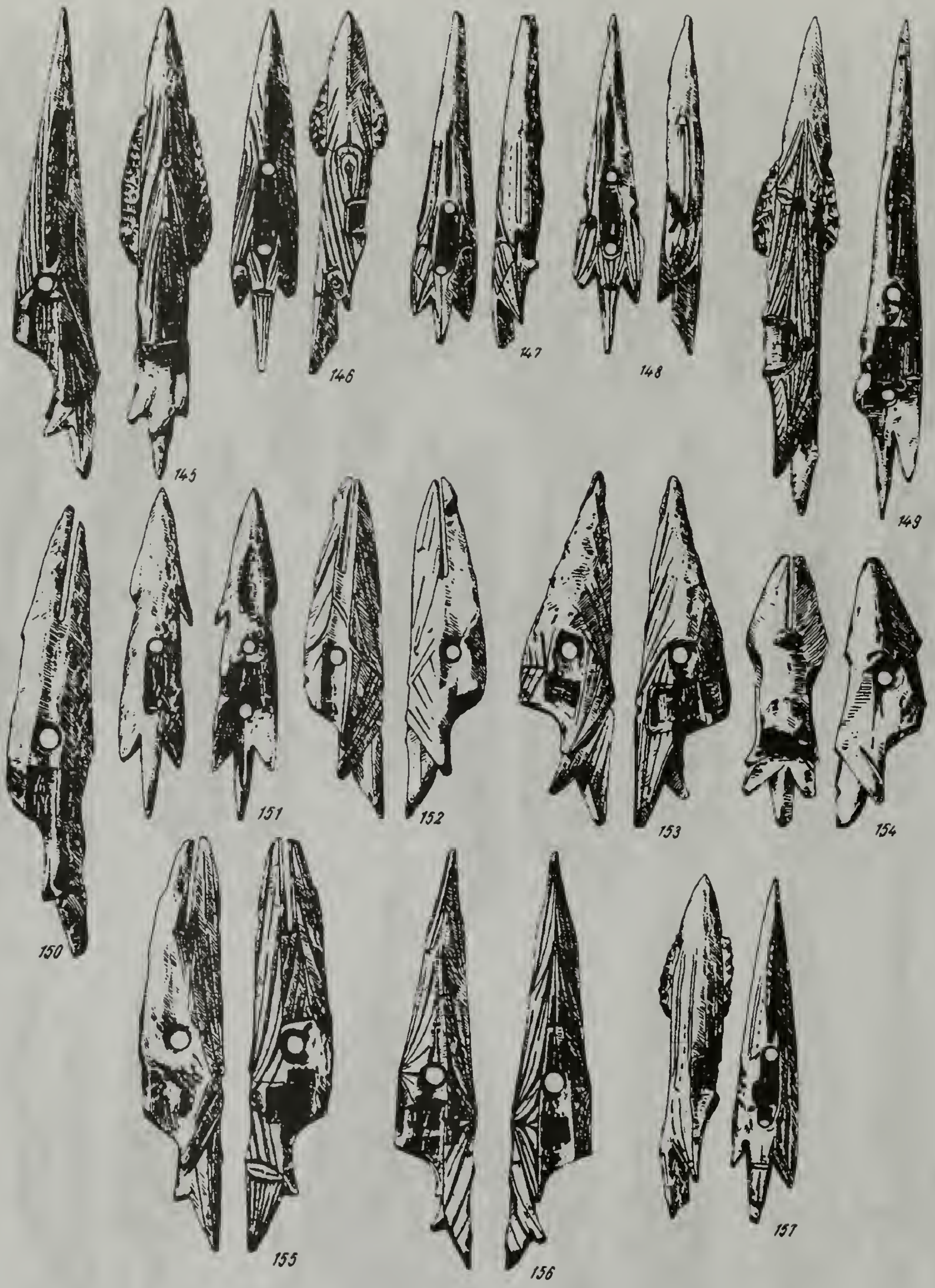


Figure 38 (3/5 natural size). Burial 18a(59). 145. 1A2x2P; 146. 2A2x2M3; 147. 2A2x2M3; 148. 2A2x2M3; 149. 2A2x2M3 (broken); 150. 1A2xP; 151. 2A2M3c(1–1); 152. 1BXM3; 153. 1A2YP; 154. 1BYM5; 155. 1A1XP; 156. 1A2YP; 157. 2A2x2M3.

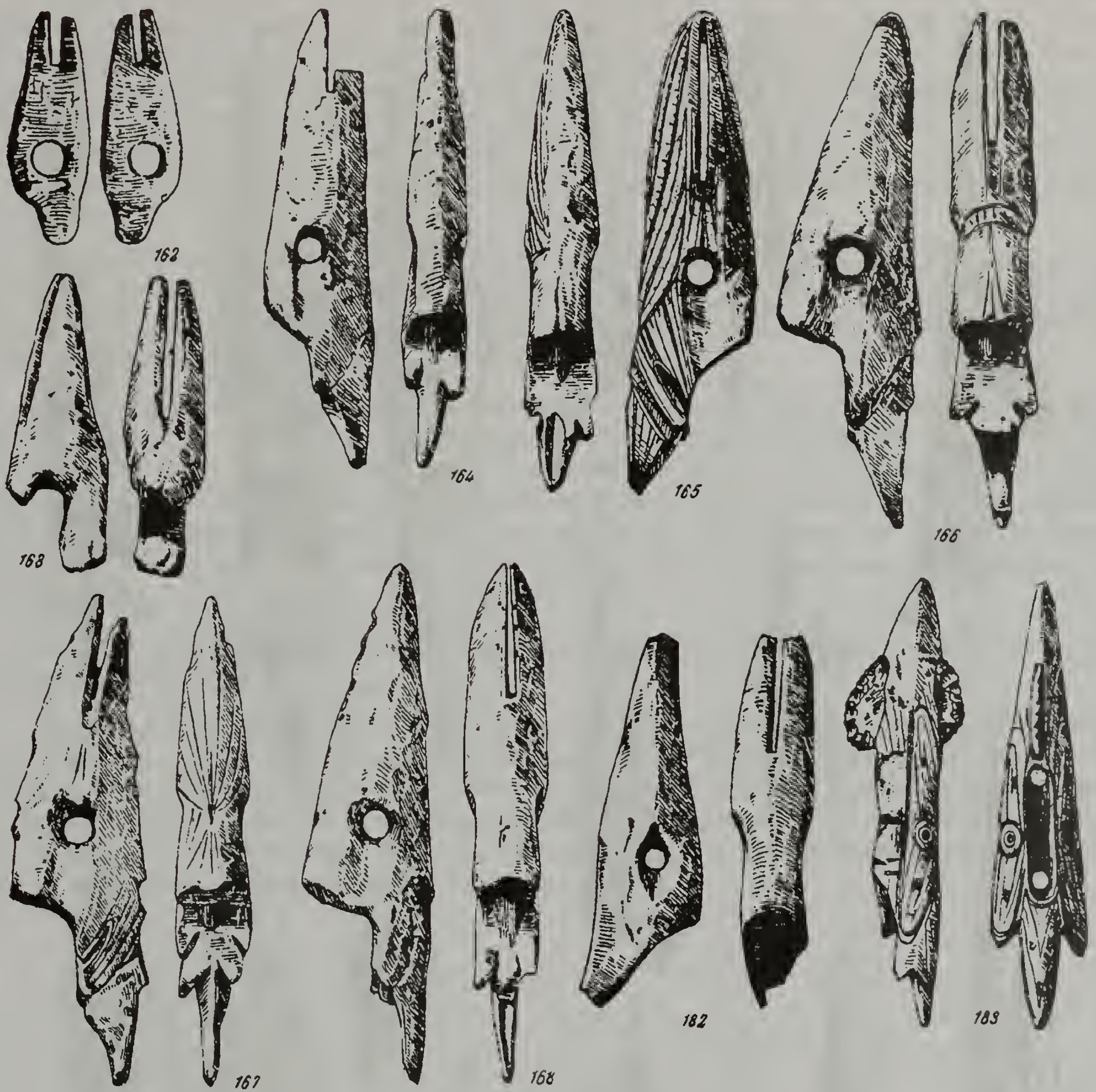


Figure 39 (2/3 natural size). Quad X-16 (1959): 162. Fragment, Quad A-Z-11 (1959); 163. Fragment; 164. 1BXM3; 165. 1BXM3; 166. 1BXM3; 167. 1BXM3; 168. 1BYM3, Burial 2(60); 182. 1BYM1; 183. 2A2x2M3.

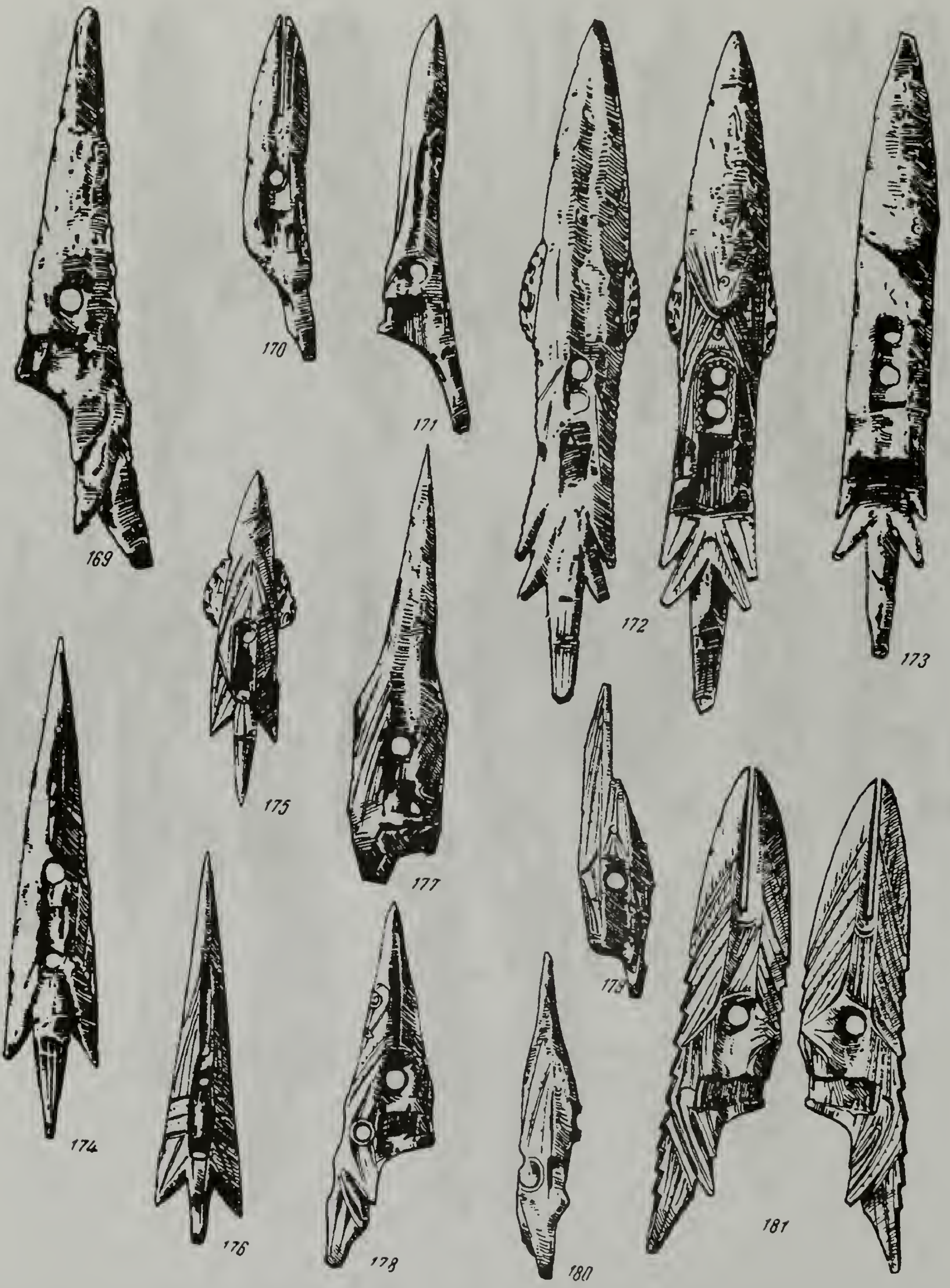


Figure 40 (3/5 natural size). From back dirt of 1955 trench: 169. 1A2YP; 170. 1A1XP; 171. 1A2x2P, Burial 23(59); 172. 2A2y2M5; 173. 2A2y2M5 (blank); 174. 2A2x2M3; 175. 2A2y2M3; 176. 2A2x2M3; 177. 1A2y2? (punch fragment); 178. 1A2x2P; 179. 1BX? (fragment); 180. 2A2X? (fragment); 181. 1BXM3.

A 1BYM5 harpoon head from trench of 1955 (Fig. 23:3) had a groove for binding, but the groove was not near the socket but rather near the slot for the end blade. It was the only head in Uelen cemetery in which the end blade was fixed by a girdle. That may also have been done to prevent breakage. The Eskimos of the north coast of Canada and Alaska used a similar method to attach end blades. Examples are presented in Ford's work (Ford 1959:233, Figs. 116, 117). But as you can see in the illustrations, the insets for such harpoon heads were made by pressure retouch and had to be attached by binding in the slot. At Uelen they usually used changeable ground slate end blades and therefore did not have to attach them with a girdle.

Almost all of the toggling harpoon heads with end blades had very narrow slots that could accommodate only thin end blades. A number of such slate end blades were found in the Uelen cemetery. Usually such end blades had straight bases that transformed into the blade with two working edges (the part between the blade and base was somewhat rounded) (Fig. 41:1, 2).

Similar harpoon-head end blades of siliceous stone were very rare finds. The blades were made by bifacial retouching: the sides that touched the edges of the slot in the harpoon body were ground (Fig. 41:3). Another form of ground slate end blades had a rather rough base, a flat triangular area for fitting them into the harpoon head slot, and two lateral, beveled working edges. The form and method of production of these end blades was similar to those of slate dart points. The difference was that dart points had long hafts that were fitted into the front portion of the shaft, which was then bound, firmly clamping the end blade.

We now will describe harpoon foreshafts. Harpoon foreshafts were made in two styles, corresponding to the two socket types.

The first type was the foreshaft with a flattened front end for inserting it into the open socket of the harpoon head (Fig. 41:12). The second type was a truncated cone. Some harpoon foreshafts had Old Bering Sea ornamentation. Interestingly, the ornamentation on the foreshaft was identical to the ornamentation on the harpoon head and the socket piece. Burial 14–15(58) contained an example of this: all the harpoon parts were richly decorated with complex curved lines (see harpoon heads in Fig. 29:55–59, a foreshaft in Fig. 41:8, and a socket piece in Fig. 43:3).

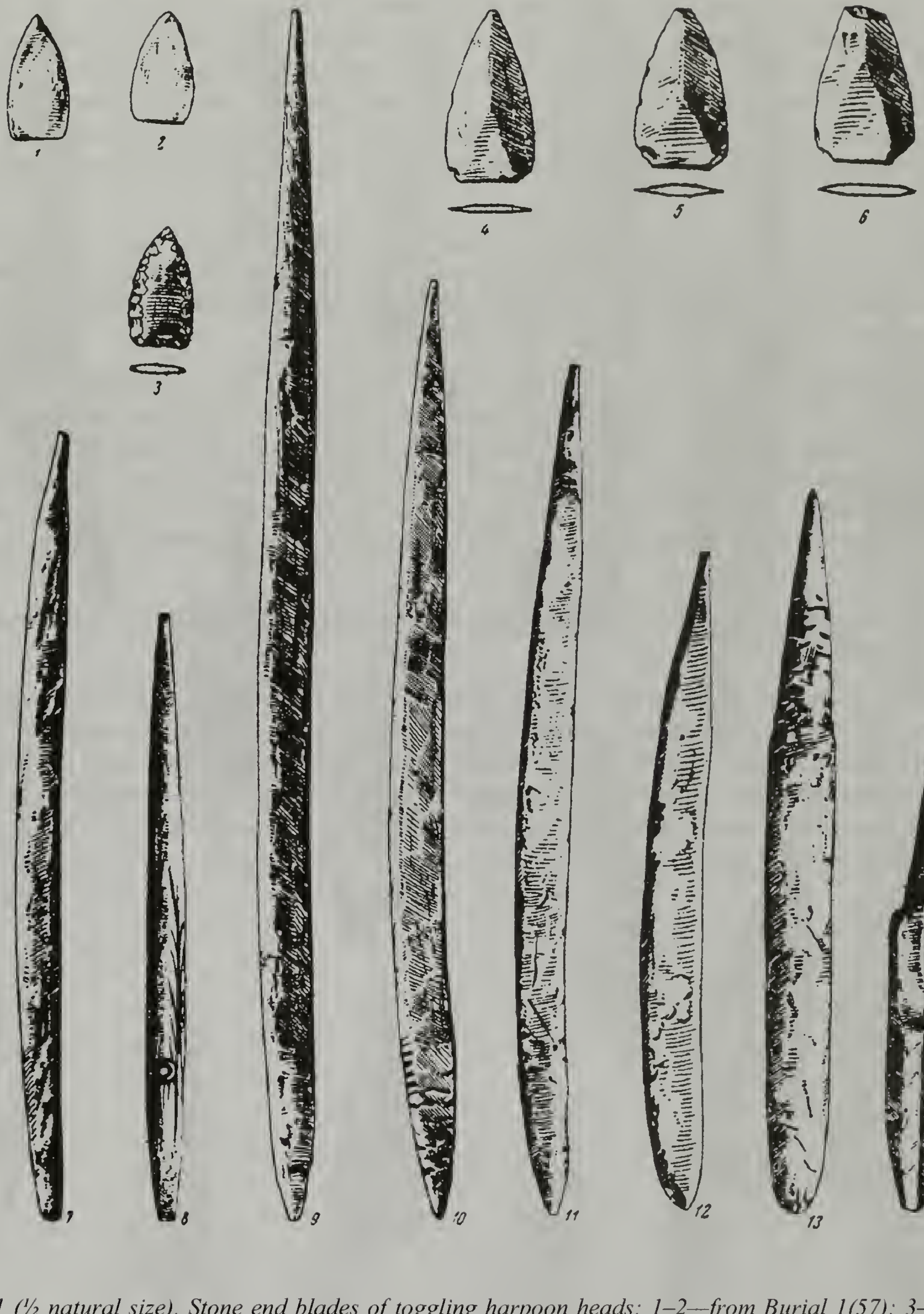


Figure 41 (½ natural size). Stone end blades of toggling harpoon heads: 1–2—from Burial 1(57); 3—from Burial 26(58); 4–6—from Burial 22(58). Foreshafts: 7—from Burial 1(57); 8—from Burial 14–15(58); 9—from Burial 10–11(57); 10—from Burial 17(57); 11—from Burial 4(59); 12—from Burial 1(57). Harpoon ice picks: 13—from Burial 1(57); 14—from Quad E-4 (1958).

We have already mentioned the long and massive foreshafts that had no hole for binding them onto the harpoon socket piece. These foreshafts were fixed directly onto the harpoon shaft (Fig. 41:9–12).

When the Eskimos moved from walrus to whale hunting, they continued to use the large harpoon heads and massive foreshafts they had used to hunt walruses. These foreshafts were fixed directly to the harpoon shaft (without a socket piece). This construction allowed them to switch to whale hunting using the same techniques they had used for walrus hunting. Massive harpoon foreshafts that were up to 40 centimeters long enabled one to harpoon a whale. The long foreshaft allowed the harpoon head to penetrate deeply into the body of the animal and cause considerable damage. The stationary mounting of the foreshaft to the shaft was therefore crucial.

In the period of the developed Old Bering Sea culture, special toggling harpoon heads appeared that were used only for whaling (Arutiunov et al. 1963:Fig. 2b:6).

A harpoon foreshaft was found in Burial 17(57) (Fig. 41:10), a harpoon head with a closed socket is seen in Figure 26:27. The harpoon head is only 8.5 centimeters long, but it could have been used with the foreshaft in Figure 41. Possibly, the harpoon head was used to hunt beluga (there was an extra slot for binding and a groove around the closed socket). Obviously, the modifications to the harpoon head were made to reinforce the foreshaft's socket.

The harpoon head in Figure 25:26 could have been used not only for walrus but also for whale hunting. For whale hunting, the head was used with a massive foreshaft that was fixed onto the shaft (not the socket piece) and provided the necessary sturdiness by stiffening of the whole construction. Figure 41:9 depicts a harpoon foreshaft that could have been used with this harpoon. Both objects were found in the same grave.

Figures 42 and 43 are drawings of harpoon socket pieces and finger rests. Drawings of ice picks, which were fixed to the lower portion of the harpoon shaft, are seen in Figure 41.

Many harpoon socket pieces were found at the Uelen cemetery. They differed according to the method of affixing them to the harpoon shaft.

There were two main types: those with socket pieces set on the shaft, and those with socket pieces inserted into the shaft.

The first type was more numerous at the Uelen cemetery. The socket piece from Burial 12(58) was the simplest (Fig. 42:6). The socket piece was split at the base and placed on the thinner upper part of the shaft, which was also split to catch the bar in the upper section of the split in the socket piece. This attached the bone and wood snugly in two planes. The socket piece was immobilized using a peg, which was in one of the two "tails" of the socket piece. The socket piece in Figure 42:11 from Burial 2–3(59) represents a modification. The front part of the shaft was set in the conical hollow in the base of the socket piece. The tail was fixed to the shaft with a walrus-tusk dowel. The binding was passed through a hole in the body of the socket piece, and the socket piece was firmly tied to the shaft.

Most of the socket pieces from among the first type were attached only with the aid of binding, without dowels, and had slots in the body and both parts of the tail. We think the tails were also wound with a soaked thong that dried and shrank, thus tightly affixing the socket piece to the shaft. The socket piece from Burial 6(59) is an example (Fig. 42:7).

The second type of socket piece had a conical base. In one case (Fig. 42:13), there was a hole for a dowel or thong in the base. But the binding strung through the hole in the body of the socket piece was more important (Fig. 42:8).

Only one example of a socket piece without a cylindrical (although almost cylindrical) base was found (Fig. 42:12). This type is very rare.

Two other curious objects were found in Uelen cemetery. By the method of attachment, they are similar to socket pieces of the second type, but these objects were very long and made of two rods united by a dowel. It is difficult to determine the purpose of this construction (Fig. 42:10).

The object in Figure 42:14 is also unusual. It resembles a socket piece, except it is very short. Harpoon finger rests were attached to the harpoon shafts at that time, just as they are now. Various kinds of these objects are shown in Figure 43:10–13.

Many small nail-shaped walrus-tusk articles were found in the Uelen cemetery. Their purpose was not determined until after the excavations at Ekven cemetery. The same types of articles, as mentioned earlier (Arutiunov and Sergeev 1962:15), were inserted (as decoration) in a fragment of a wooden shaft and into other wooden objects. Variants of these objects from Burial 6(59) are shown in Figure 42:1–5.

According to ethnographic data, harpoons were used for sea hunting, coastal hunting, hunting from the edge of ice, and hunting at breathing holes on the ice. When traveling on the ice, the hunter risked falling through it or getting stuck in a crack under the snow. To test the strength of the ice, the hunter attached an ice pick to the bottom of the harpoon shaft. These walrus-tusk picks were often found in burials. Two such picks are shown in Figure 41:13, 14.

Sleds with walrus-tusk runners were used in ice hunting to transport the baidar and any procured animals. Several runners were found in the cemetery (Fig. 47:1, 2).

Floats, made from a whole sealskin, were very important when one harpooned large sea mammals. Holes in the skin were plugged with studs or other material. There were solid studs and others with holes that were plugged with stoppers (Fig. 43:9, 14–18).

Thus, we can say that all the harpoon-hunting elements that ethnographers found among the Eskimos originated in ancient times, and the published materials attest to this.

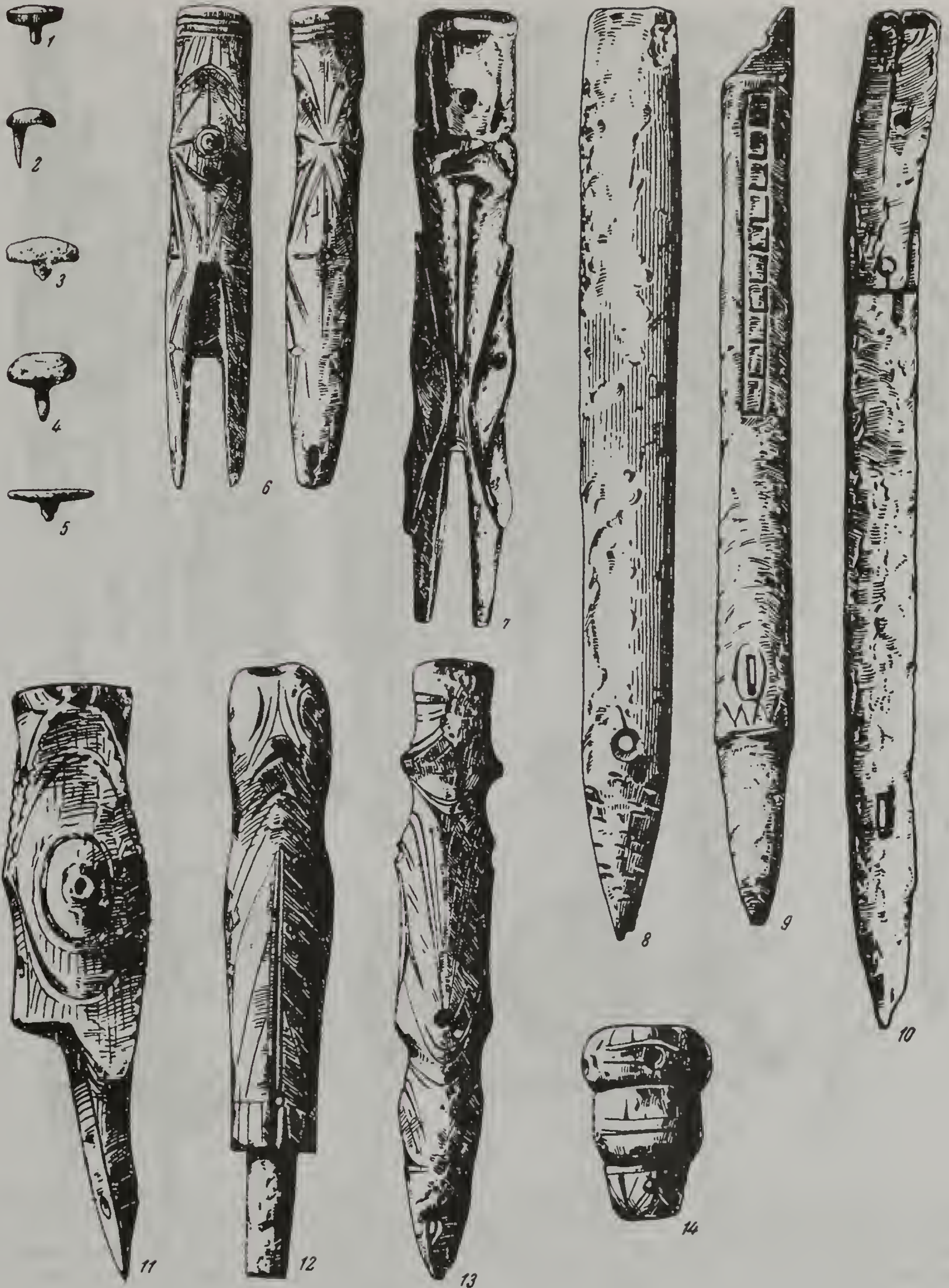


Figure 42 (½ natural size). Insets for inlaying harpoon shafts: 1–5—from Burial 6(59). Heads of harpoon shafts: 6—from Burial 12(58); 7—from Burial 6(59); 8—from Burial 2(60); 9—from Burial 7(58); 10—from Burial 3(58); 11—from Burial 2–3(59); 12—from back dirt of 1955 trench; 13—from back dirt of 1955 trench; 14—from Burial 2–3(59).

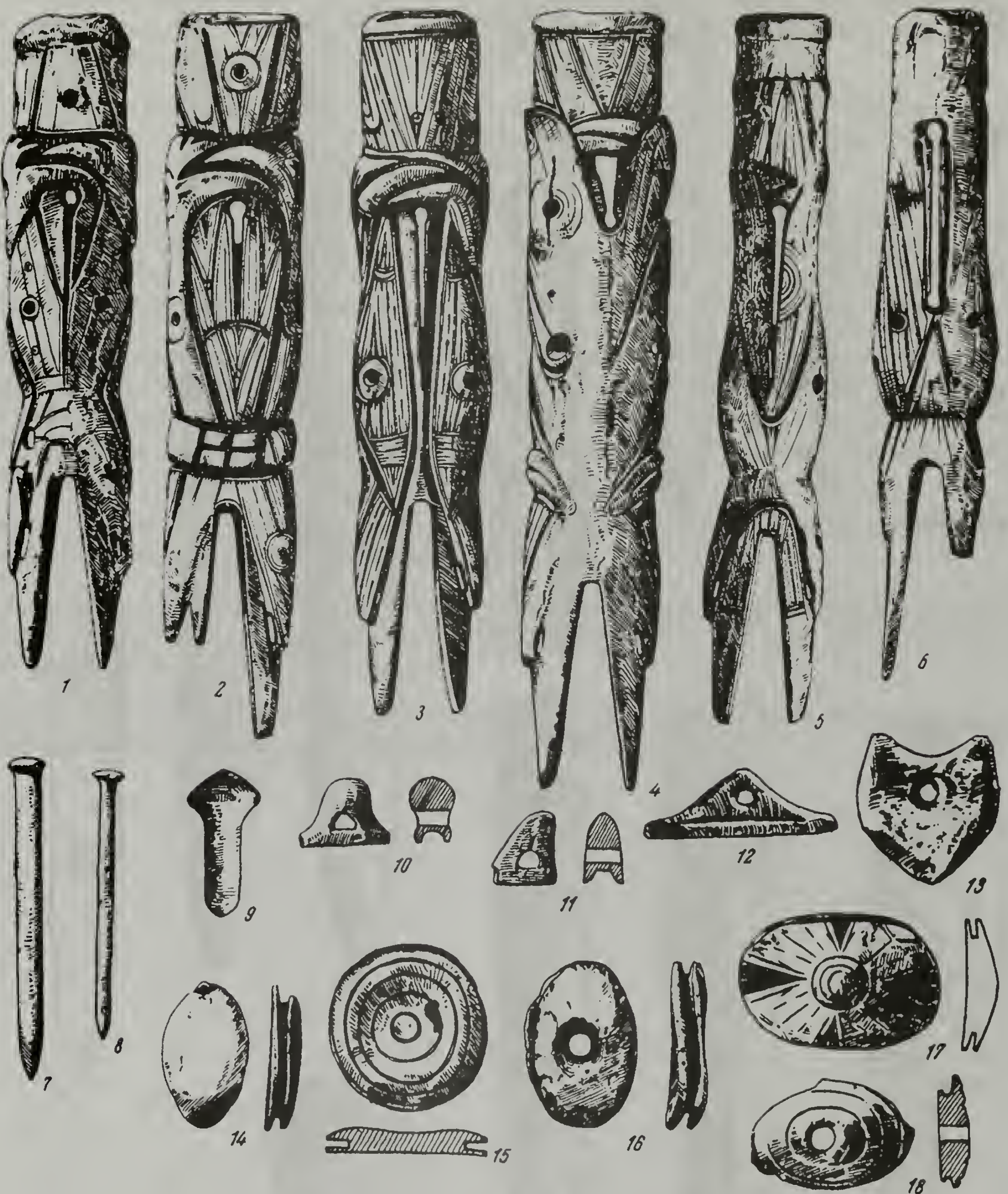


Figure 43 (½ natural size). Heads of harpoon shafts: 1—from Burial 1(55); 2—from Burial 4(60); 3—from Burial 14–15(58); 4—from Burial 4(58); 5—from Burial 6(59); 6—from Burial 1(57). Wound plugs: 7—from Burial 5(57); 8—from Burial 9(57). Plug for seal-skin float: 9—from Burial 22(58). Harpoon finger rests: 10—from Burial 3(57); 11—from Burial 4(57); 12–13—from Burials 14–15(58). Mouthpieces for seal-skin floats: 14—from Burial 6(59); 15—from Burial 12(58); 16—from Burial 6(59); 17—from Burial 22(58); 18—from Burial 22(58).

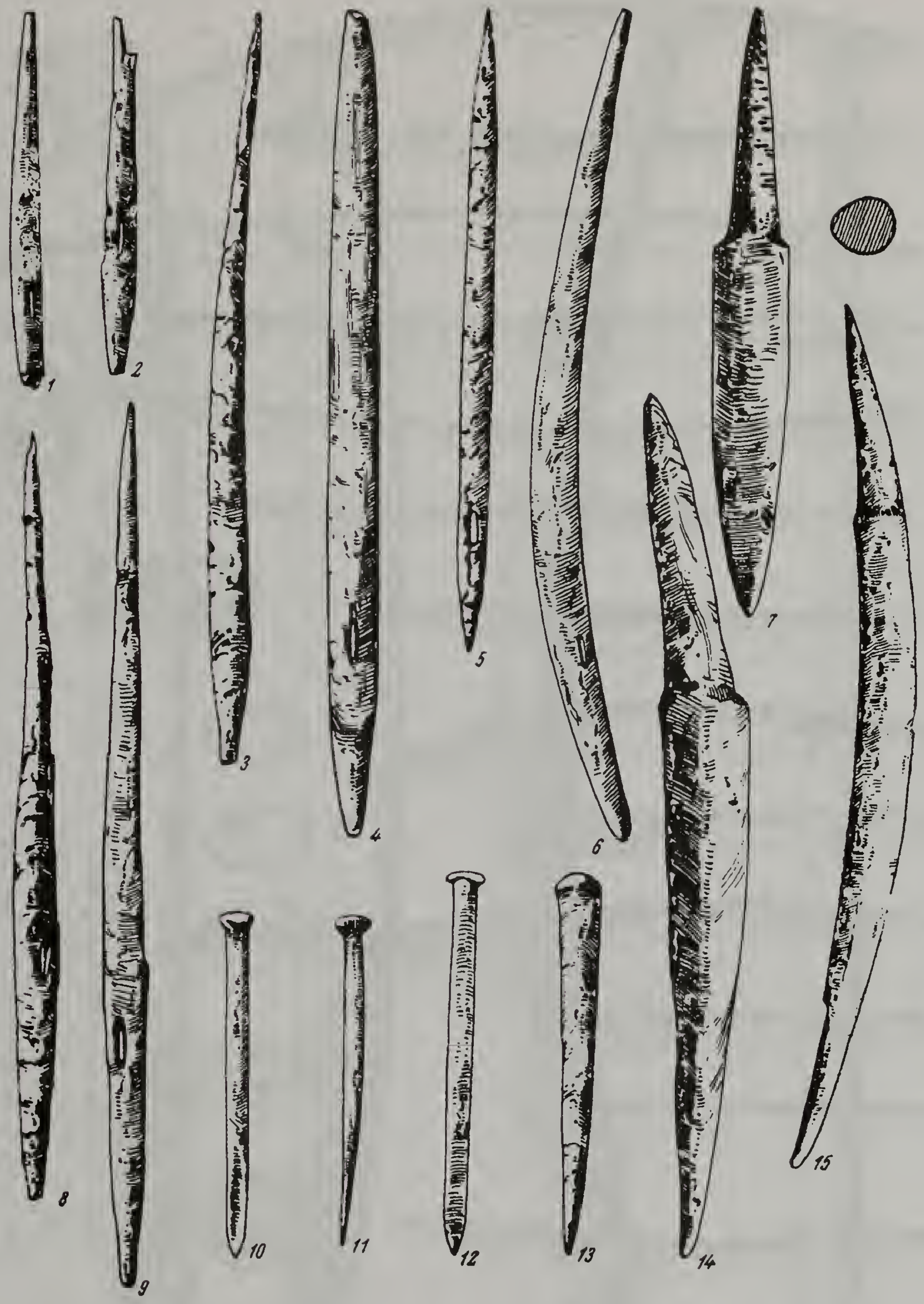


Figure 44 (½ natural size). Harpoon foreshafts: 1–2—from Burial 12(58); 3—from Burial 17(57); 4—from Burial 10–11(57); 5—from Burial 2(57); 6—from Burial 1(57); 8–9—from Burial 16(57). Harpoon ice picks: 7—from Burial 22(58); 14—from Burial 10–11(57); 15—from Burial 6(57). Wound plugs: 10–11—from Burial 4(57); 12—from Burial 15(57); 13—from Burial 13(58).

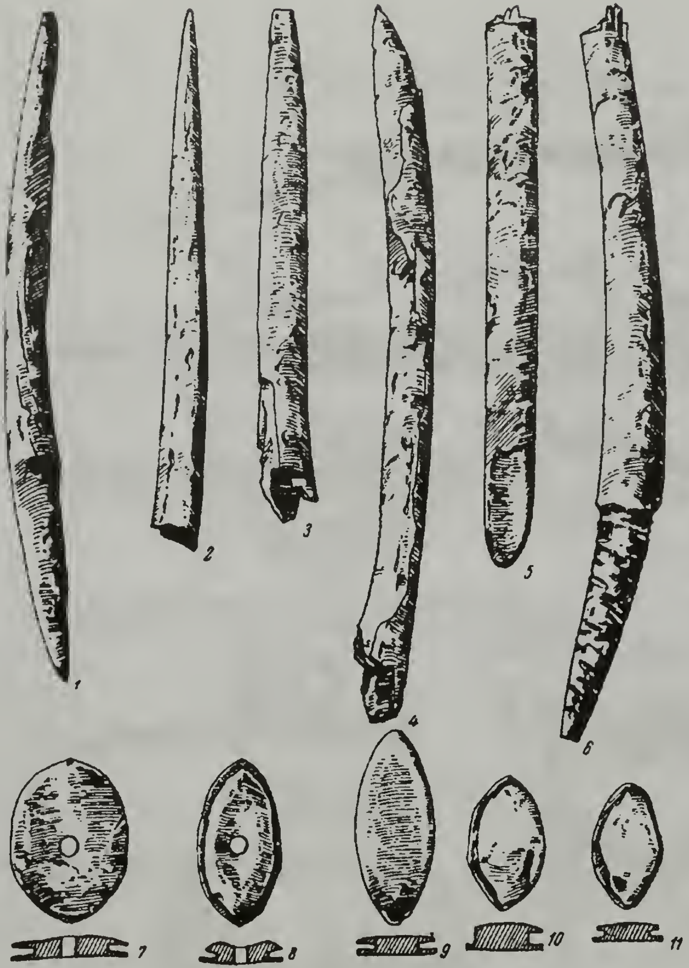


Figure 45 (½ natural size). Oblong objects: 1—from Burial 1(57); 2—from Burial [?](58); 3–4—from Burial 22(58); 5–6—from Burial 19(57). Mouthpieces: 7–9—from Burial 12(58); 10–11—from Burial 22(58).

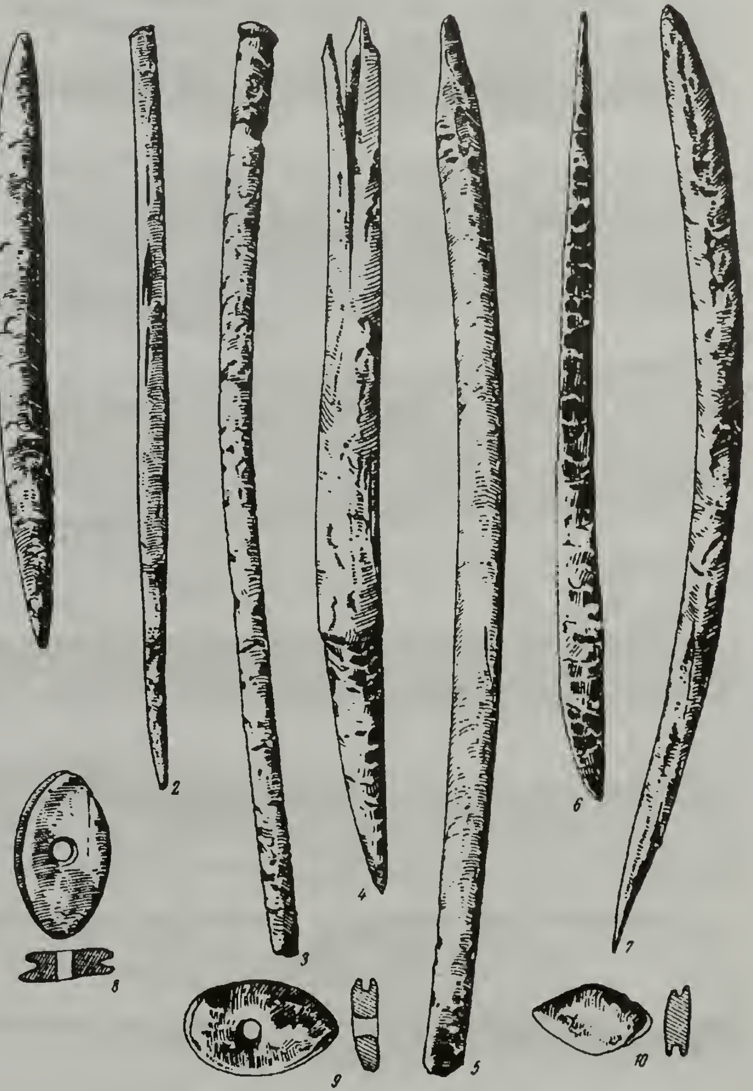


Figure 46 (½ natural size). Oblong objects and mouthpieces: 1—from Burial 17(57); 2—from trench wall (1955); 3—from Burial 17(57); 4—from Burial 3(57); 5—from Burial 12(58); 6—from Burial 2(57); 7—from Burial 7(57). Mouthpieces: 8–10—from Burial 22(58).

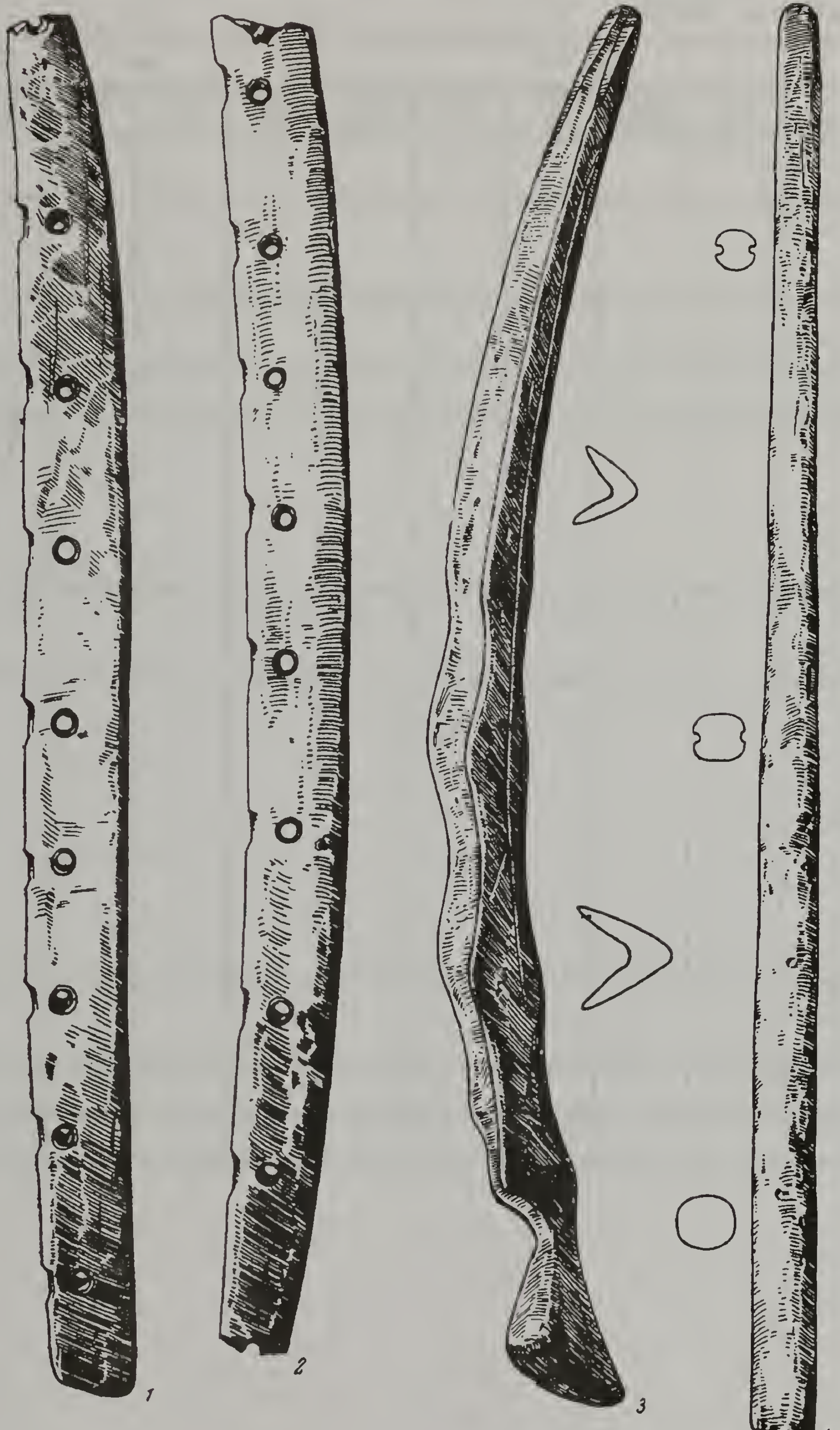


Figure 47 (½ natural size). 1–2—sled runners from Burial 18(57); 3—beater from Burial 4(60); 4—item of wood with lateral notches from Burial 4(60).

Table 6. Structure of Toggling Harpoon Heads from the Uelen Cemetery (Excavations 1955, 1957–1960), Expressed in Harpoon Formulae.

	1955				1957					
	Trench wall	Trench backdirt	Burial 1	Burial 2	Burial 1	Burial 4	Burial 5	Burial 6	Burial 7	Burials 10, 11
2A2M3c (1–1)										
2A2M c (2–2)										
2A2x2M3									1	
2A2x2M4										
2A2XM3										
2A2y2M3			1							1
2A2y2M5										
1BM										
1BXM1							1			1
1BXM3		1								
1BXM5										
1BXx2M3			1							
1Bx2M3										
1BYM1					3	2		1		
1BYM3				1						
1BYM5		1								
1A1XP										
1A2XP				1						
1A1x2P						1				
1A2x2P										1
1A2XPC (1–1)						1				
1A1YP										
1A2YP										
1A2y2P										
1A1x2M		1								
1A1YM										
1A3Xy2P										
1A1y1PC (0–1)						1		1		
1A2y1PC (0–1)										
1A1PC (0–1)						1				
Blanks	1									
Fragments									1	

1957			1958								
Burial 17	Burial 18	Burial 19	Burial 4	Burial 5	Burial 6	Burial 7	Burial 12	Burial 14–15	Burial 17	Burial 20	Burial 22
						1					1
	1	2				1	3	2			4 1
				1		2		1			
1				2			1	2			2
	1										3
1 1			1	1	3	1 2	1		1	1	3
1											
											1
											2

Table 6 (cont.). Structure of Toggling Harpoon Heads from the Uelen Cemetery (Excavations 1955, 1957–1960), Expressed in Harpoon Formulae.

	1958					**1959**				
	Burial 24	Burial 26	Quad C-6	Quad F-6	1955 backdirt	Burial 2-3	Burial 4	Burial 5	Burial 6	Burial 7
2A2M3c (1–1)										
2A2M c (2–2)					1					
2A2x2M3					1			1	1	1
2A2x2M4										
2A2XM3	1								1	
2A2y2M3					1				1	1
2A2y2M5										
1BM									1	
1BXM1	1									
1BXM3									1	
1BXM5										1
1BXx2M3										
1Bx2M3										
1BYM1	1				1	3				
1BYM3										
1BYM5										1
1A1XP						1	1			
1A2XP										
1A1x2P	1									
1A2x2P										
1A2XPC (1–1)										
1A1YP				1			1			
1A2YP										1
1A2y2P										
1A1x2M										
1A1YM						1				
1A3Xy2P										
1A1y1PC (0–1)										
1A2y1PC (0–1)										
1A1PC (0–1)										
Blanks			1			1		1		1
Fragments								1	4	

1959												1960	Total
Burial 8	Burial 9	Burial 10	Burial 15	Burial 16	Burial 17	Burial 18	Burial 18a	Burial 22	Burial 23	Burial X-16	Back-dirt	Burial 2	
				1			1						3
													2
		1		1			5	2	2			1	30
								1					1
													3
						5			1				15
													2
									2				
1		1											
													5
	1		3	2	1	1	1		1	4			21
													2
													1
			1										1
												1	12
										1			2
							1						7
					1		1				1		14
	3					1	1						11
								1			1		4
							1		1				3
													2
													2
							2				1		4
	1												1
													1
													2
													1
													2
													1
													1
				2									8
		1				2			3	2			16
													183

Chapter 5

The Problem of "Winged Objects"

The "winged object" occupies a special place among the early Eskimos' items of material culture. Its assignment even up to present is not completely clear, therefore the "winged object" is sometimes called the "enigma." The mystery of this object is in significant degree explained both by the fact that it is found only in the Old Bering Sea stage of Eskimo culture, which is still poorly studied, and by the fact that few "winged objects" have been found. During special archaeological investigations on the Chukchi Peninsula in 1945, S. I. Rudenko found only three (Rudenko 1972:Pls. 9:11; 17:14—fragment; 38:3). In 1955, with the discovery of the Uelen cemetery, D. A. Sergeev found one "winged object" (Sergeev 1959), and in 1956, N. N. Dikov discovered two "winged objects" in the Uelen cemetery.[18] Between 1957 to 1960, the Chukotka Detachment found 17 "winged objects" at the Uelen cemetery—in Burials 2(55), 5(57), 3(58), 5(58), 14–15(58), 24(58), 6(59), 7(59), 15(59), 16(59), 18(59), 20(59), 22(59), 2(60), and 4(60).

At the Ekven cemetery, in the three field seasons 1961–1963, there were 21 "winged objects" found.

The "winged objects" found in the Uelen and Ekven cemeteries are from different periods of the Old Bering Sea stage of Eskimo culture, and some forms are represented by only one specimen. In some cases, it is difficult to trace the evolution of individual forms. Therefore we must temporarily avoid placing "winged objects" in a typology and will publish them in chronological order of finds, indicating the burial where they were found. Though materials from the Ekven cemetery are discussed only to compare them with objects from Uelen, it is nevertheless necessary to publish details of Ekven's "winged objects" to give an idea of what this enigmatic object is and establish a record of it in the scientific literature. Illustrations of "winged objects" from the Ekven cemetery appear in Figures 53–59.

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[18] Independent of the excavations of the Institute of Ethnography AN SSSR some parts of the cemetery were opened by N. N. Dikov in 1956 and 1958. He published the materials he collected (see Dikov 1958:37, Fig. 16; 1964:21, Fig. 12).

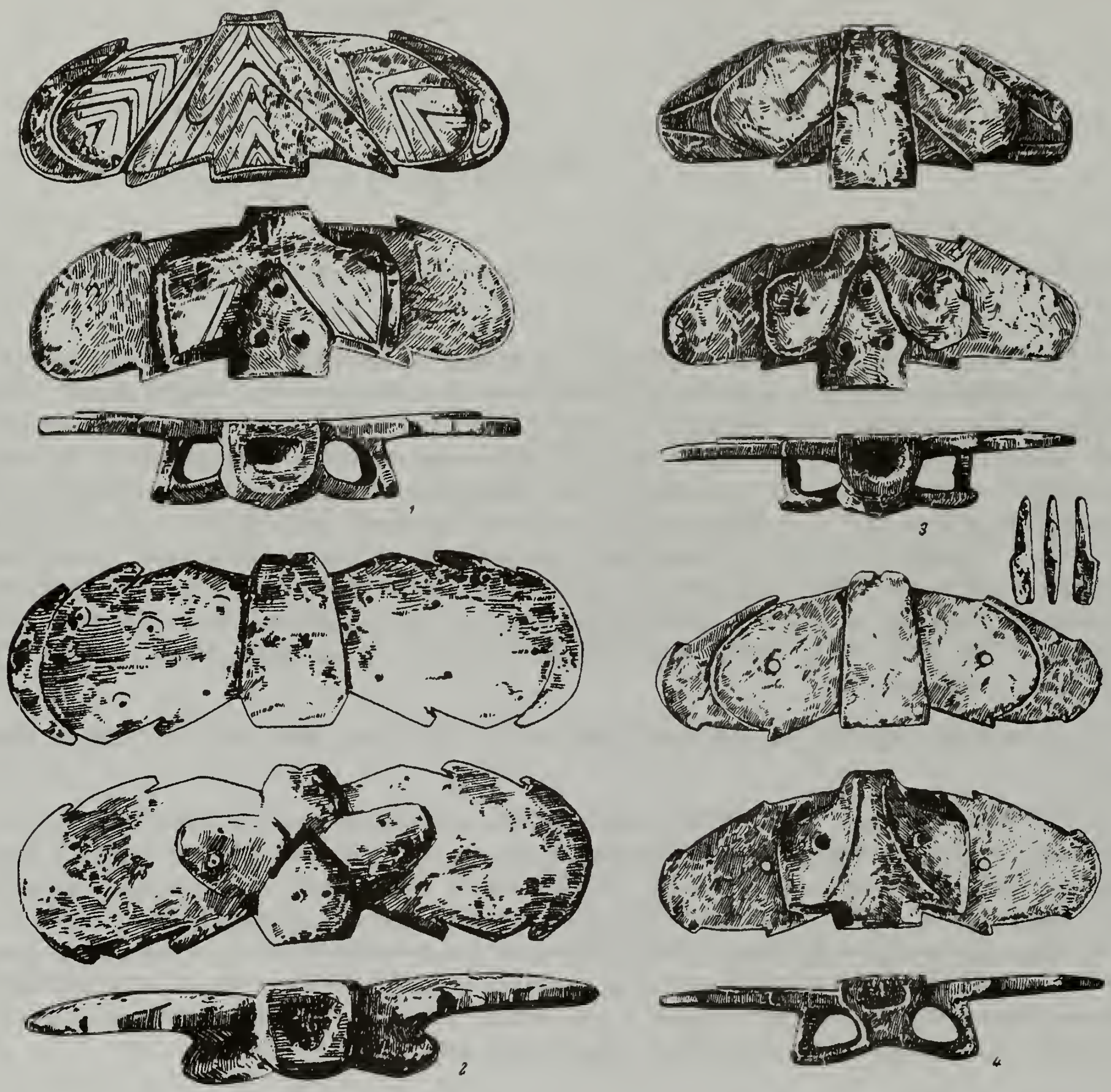


Figure 48 (½ natural size). "Winged objects": 1—from Burial 2(55); 2—from Burial 5(57); 3—from Burial 3(58); 4—from Burial 5(58).

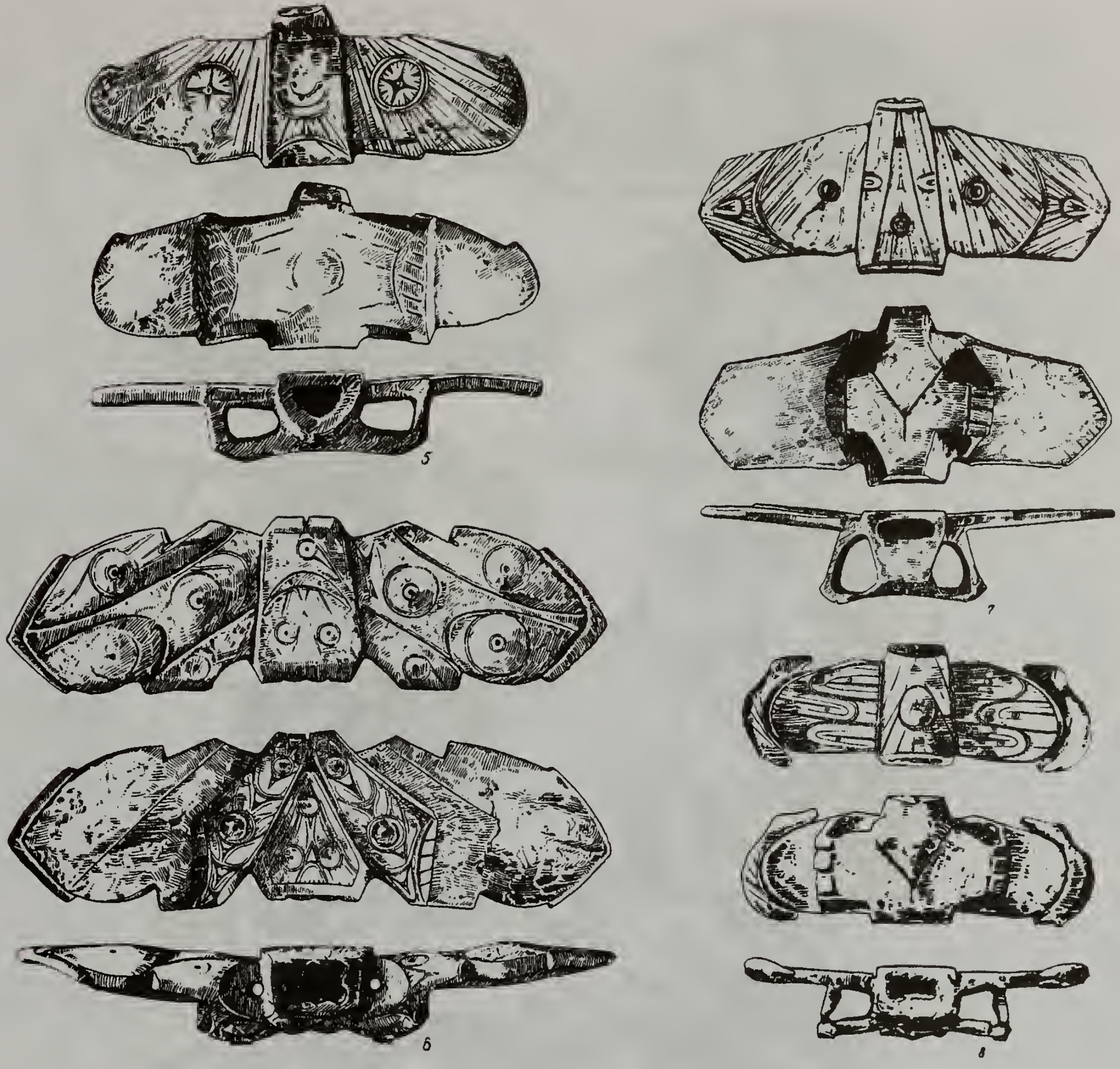


Figure 49 (½ natural size). "Winged objects": 5—from Burial 14–15(58); 6—from Burial 24(58); 7—from Burial 6(59); 8—from Burial 7(59).

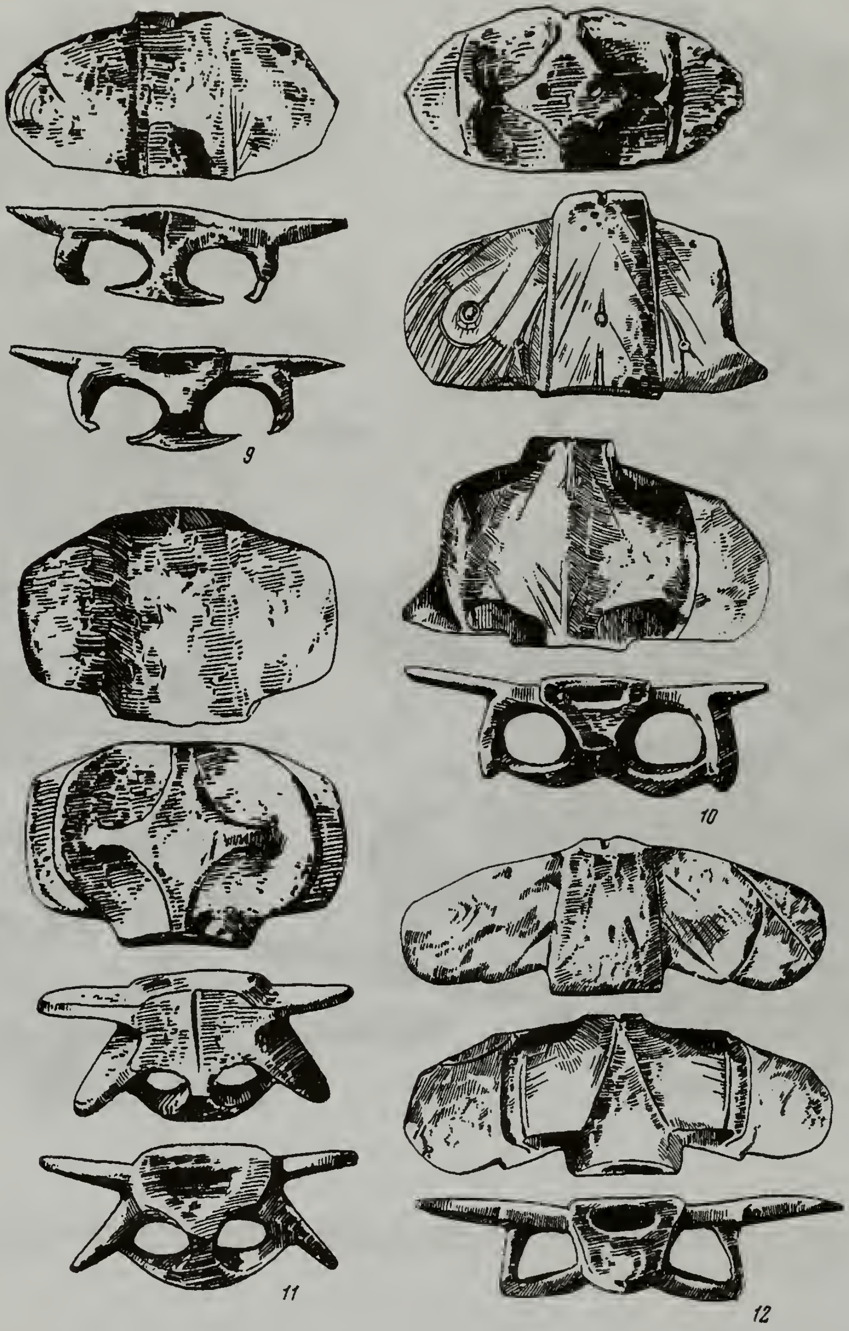


Figure 50 (½ natural size). "Winged objects": 9—from Burial 15(59); 10—from Burial 16(59); 11—from Burial 16(59); 12—from Burial 18(59).

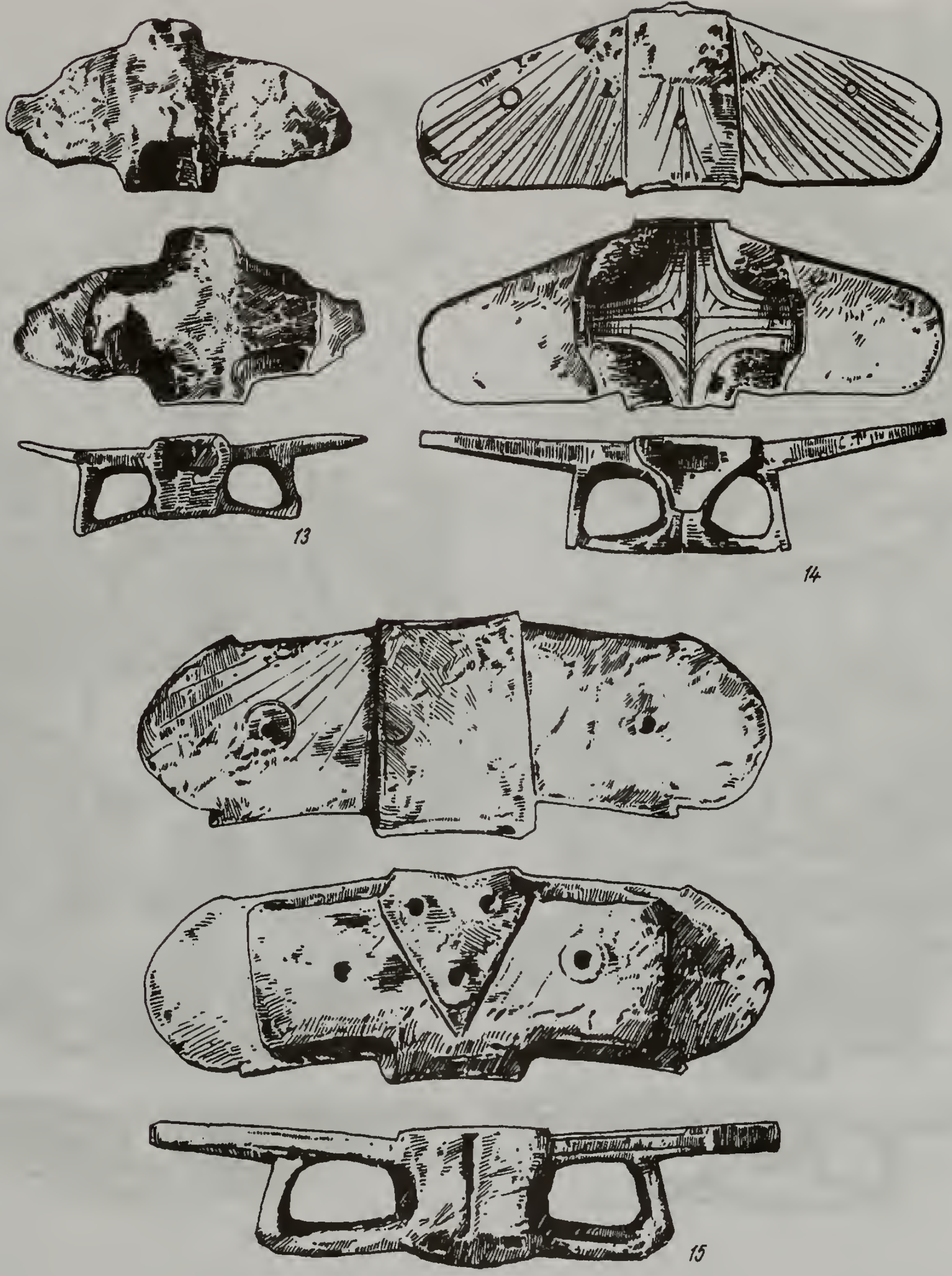


Figure 51 (½ natural size). "Winged objects": 13—from Burial 18(59); 14—from Burial 20(59); 15—from Burial 22(59).

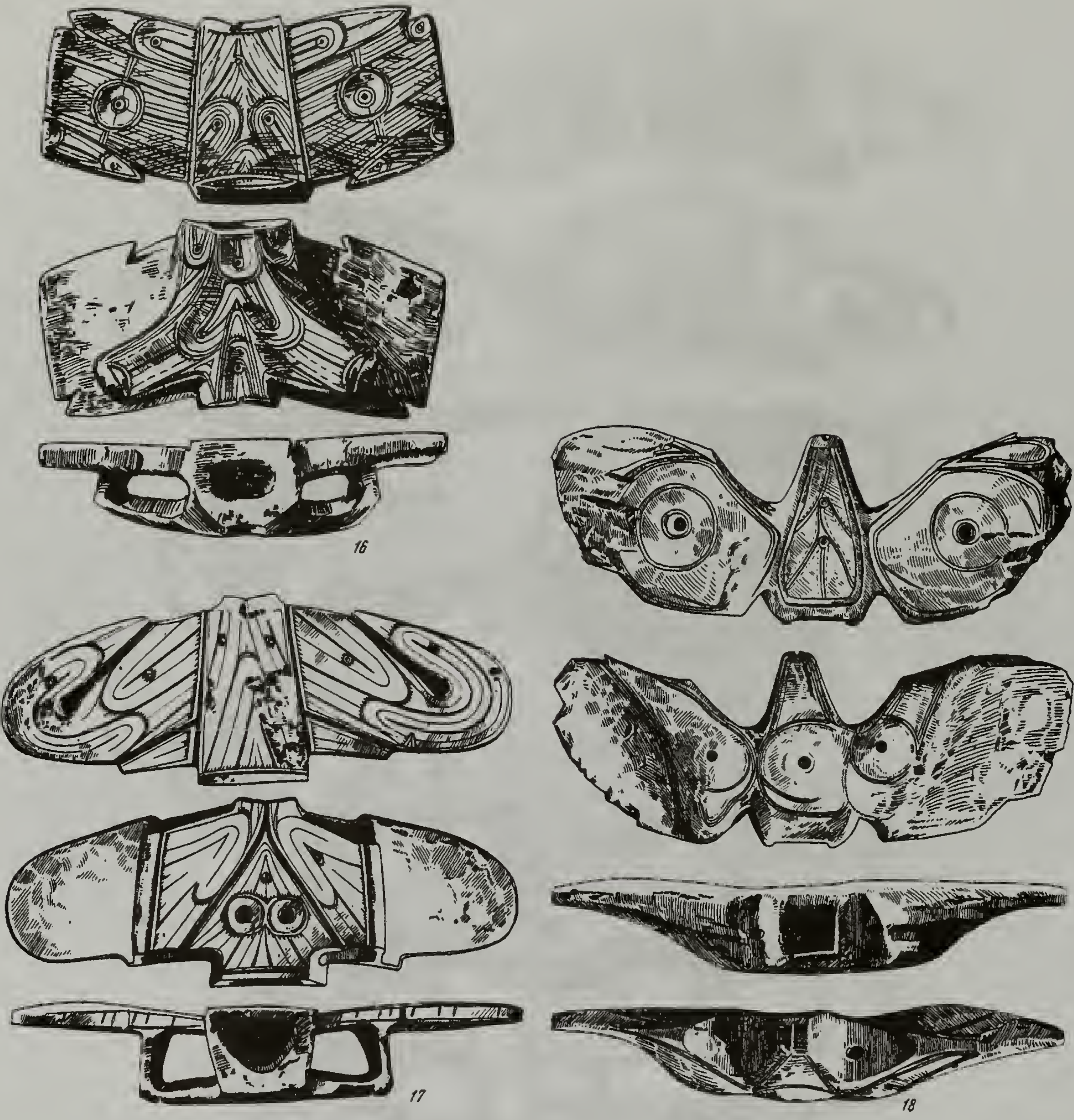


Figure 52 (½ natural size). "Winged objects": 16—surface material found in creek by cemetery in 1959; 17—from Burial 4(60); 18—from Burial 2(60).

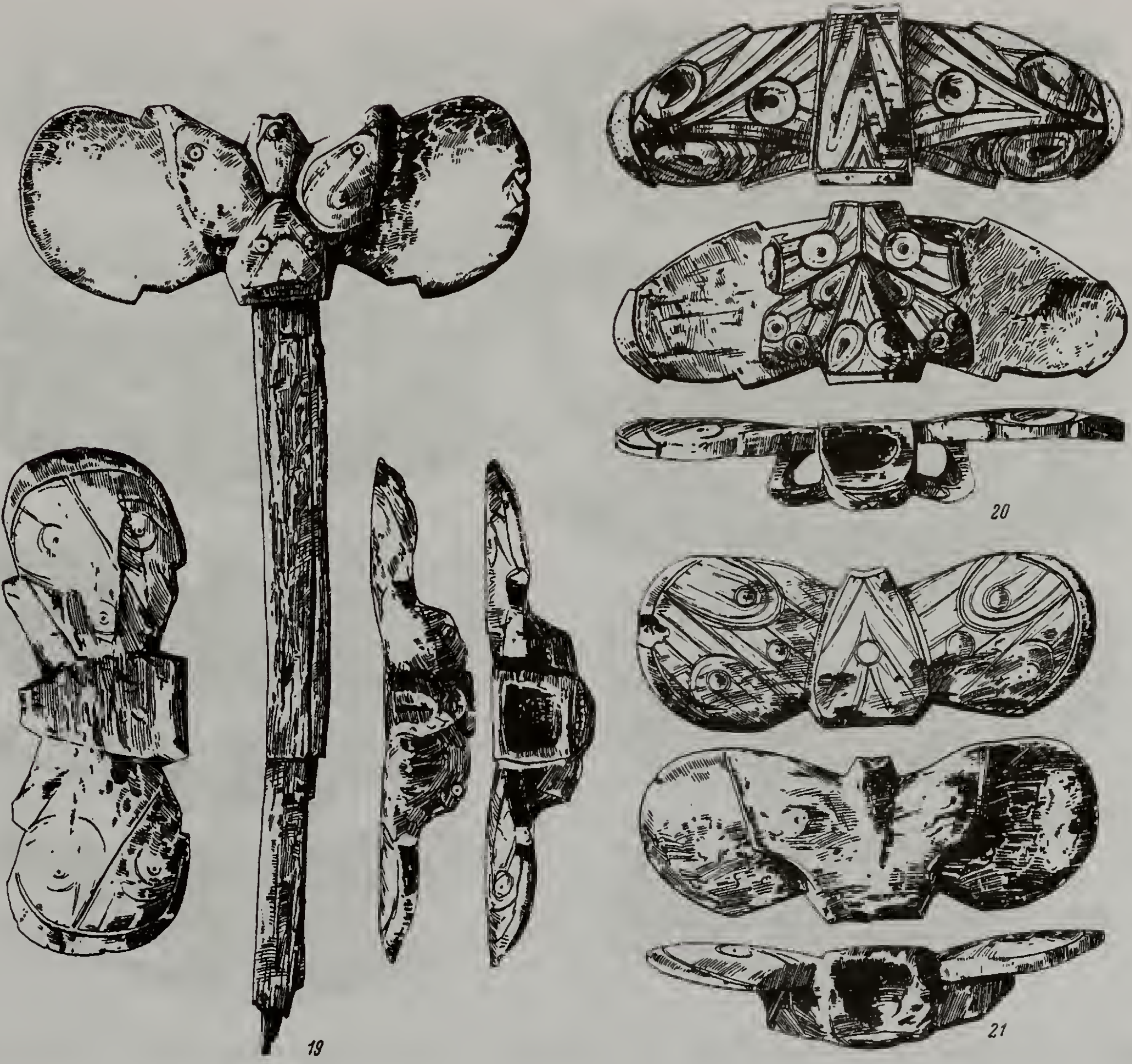


Figure 53 (2/5 natural size). "Winged objects": 19—from Burial 12(61); 20—from Burial 10(61); 21—from Burial 12(61).

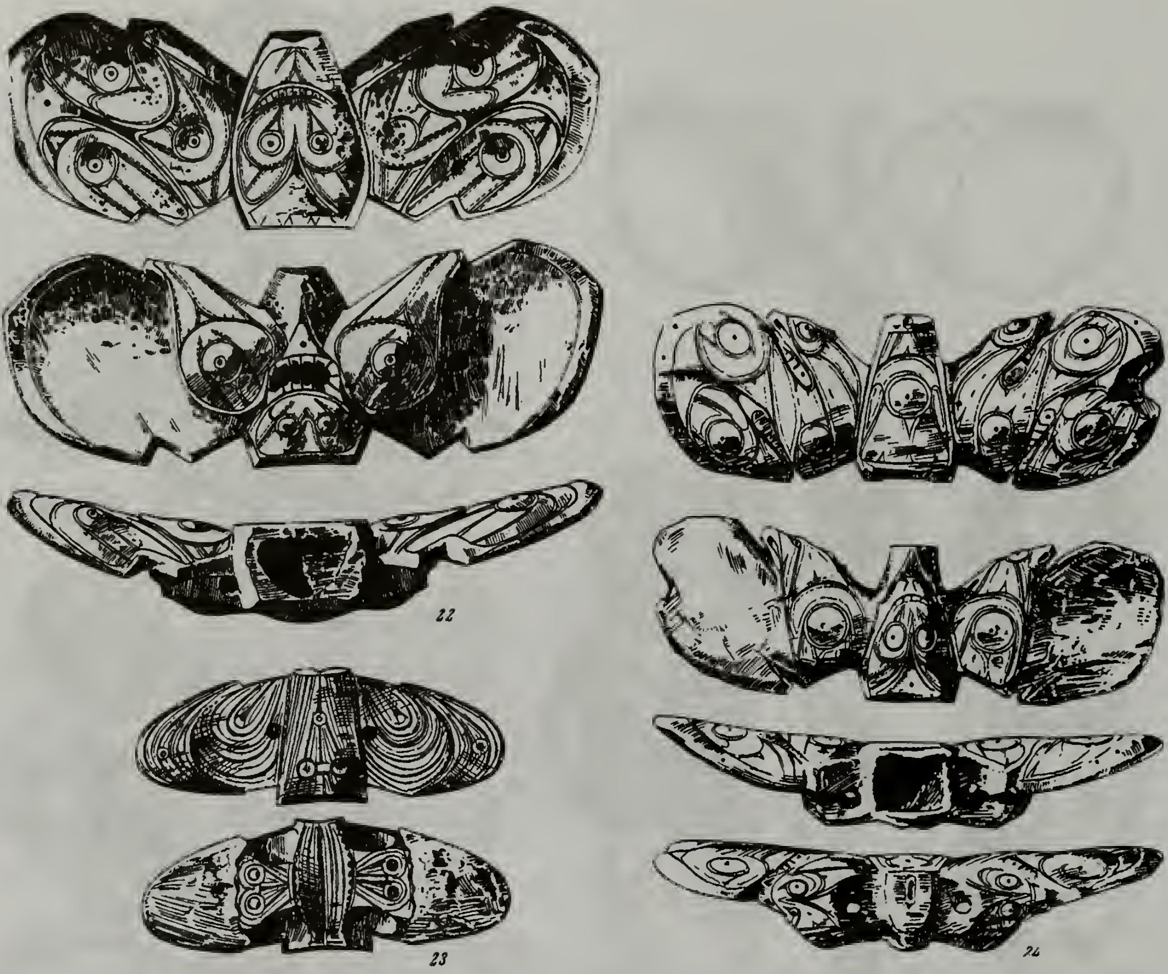


Figure 54 (½ natural size). "Winged objects": 22—from Burial 9(61); 23—from Burial 68(63); 24—from Burial 17(61).

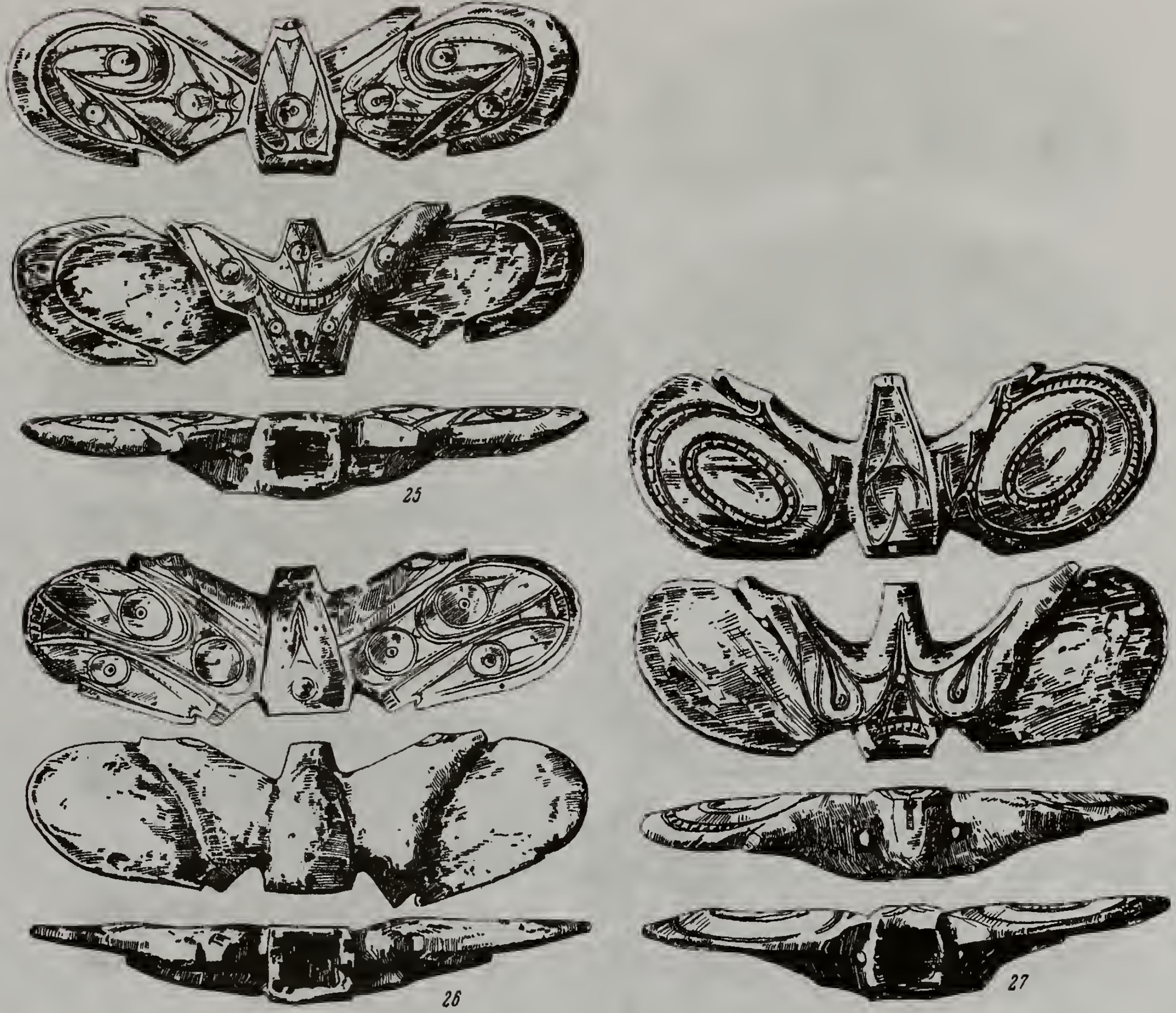


Figure 55 (2/5 natural size). "Winged objects": 25—from Burial 53(62); 26—from Burial 54(62); 27—from Burial 92(63).

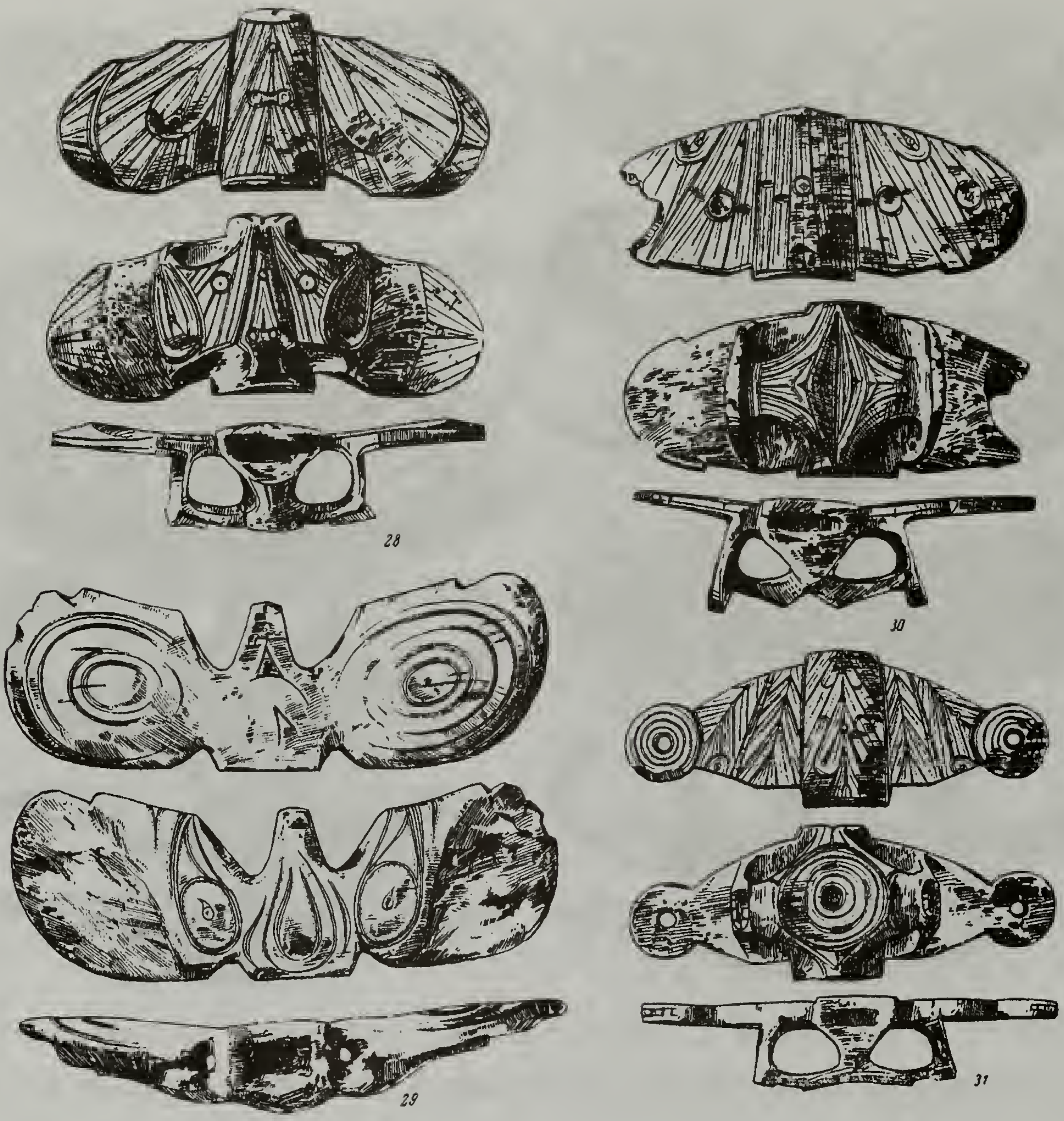
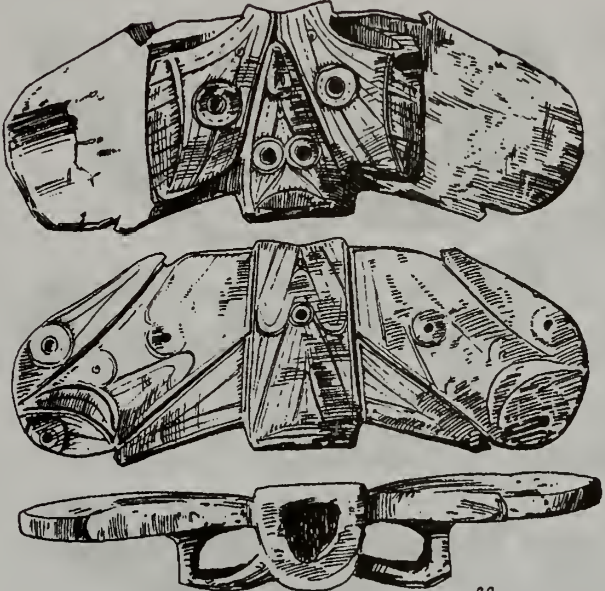


Figure 56 (½ natural size). "Winged objects": 28—from Burial 38(62); 29—from Burial 52(63); 30—from Burial 63(63); 31—from Burial 68(63).



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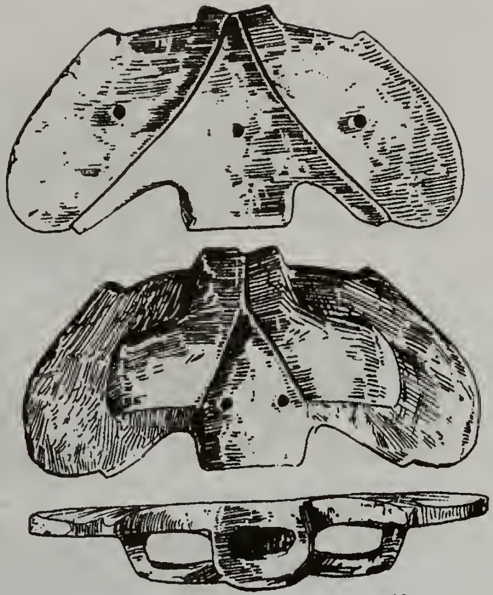

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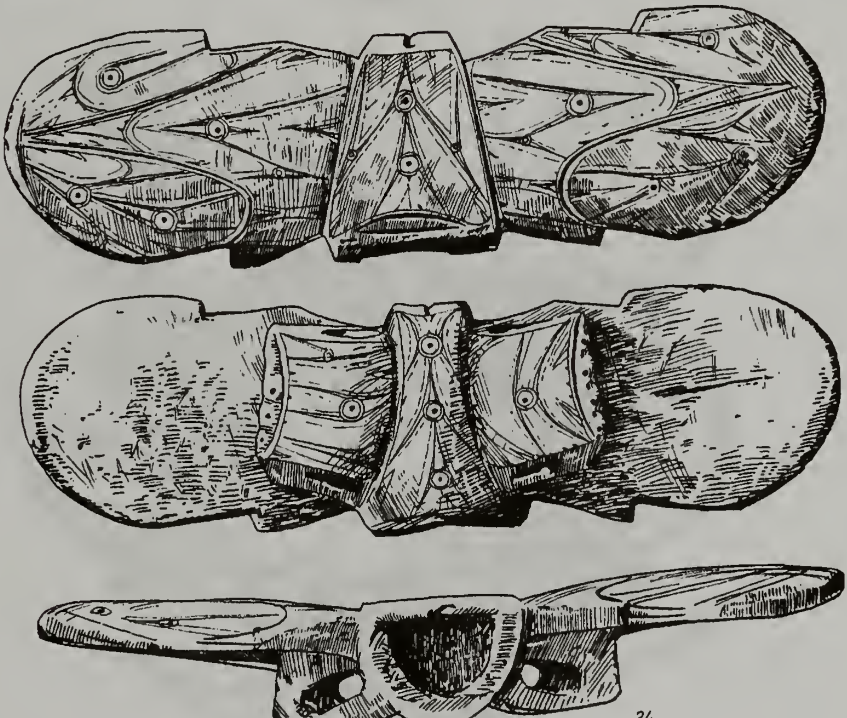

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Figure 57 (½ natural size). "Winged objects": 32—from Burial 57(63); 33—from Burial 57(63); 34—from Burial 95(63).

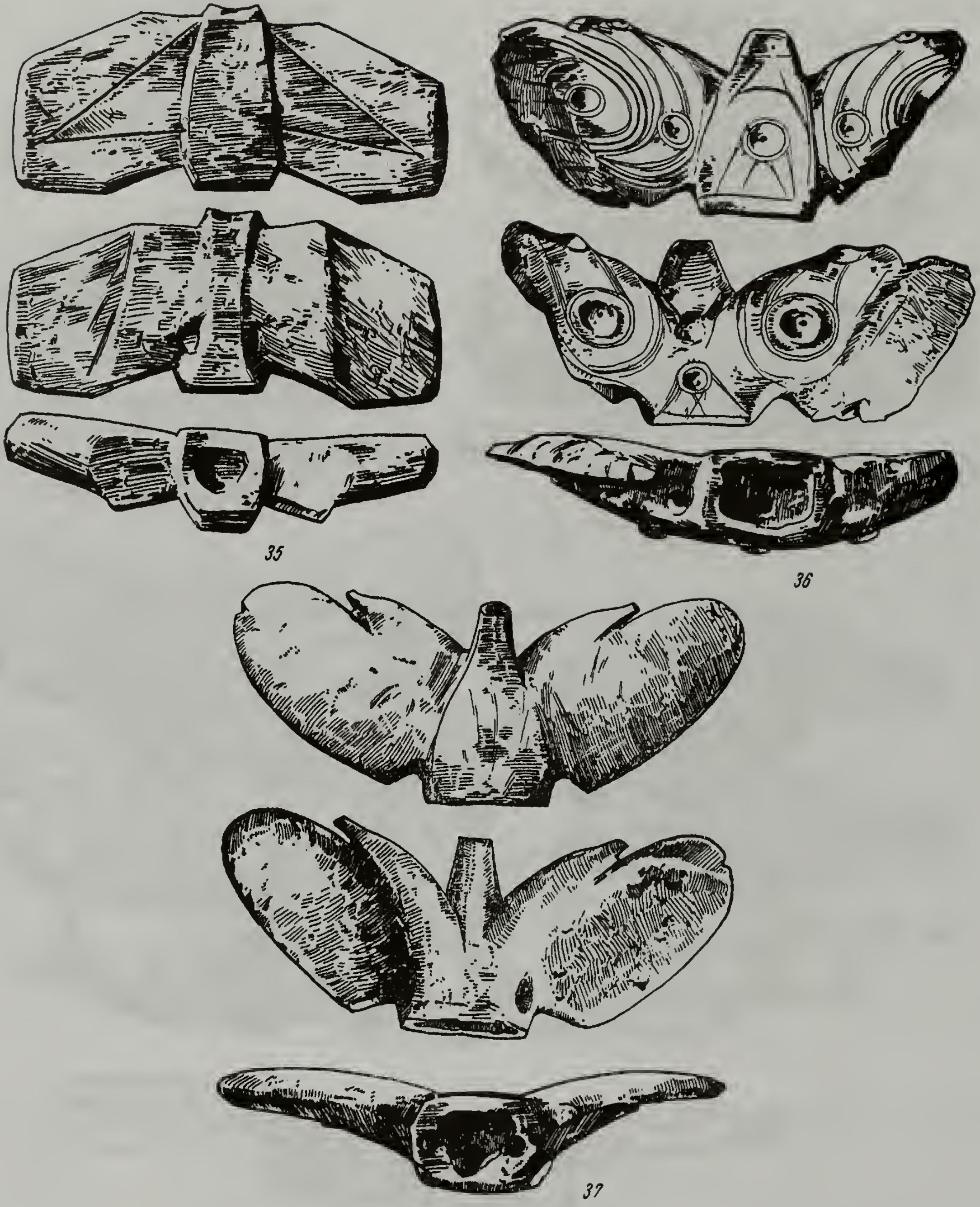

Figure 58 (½ natural size). "Winged objects": 35—from Burial 59(63); 36—from Burial 43(62); 37—from Burial 3(61).

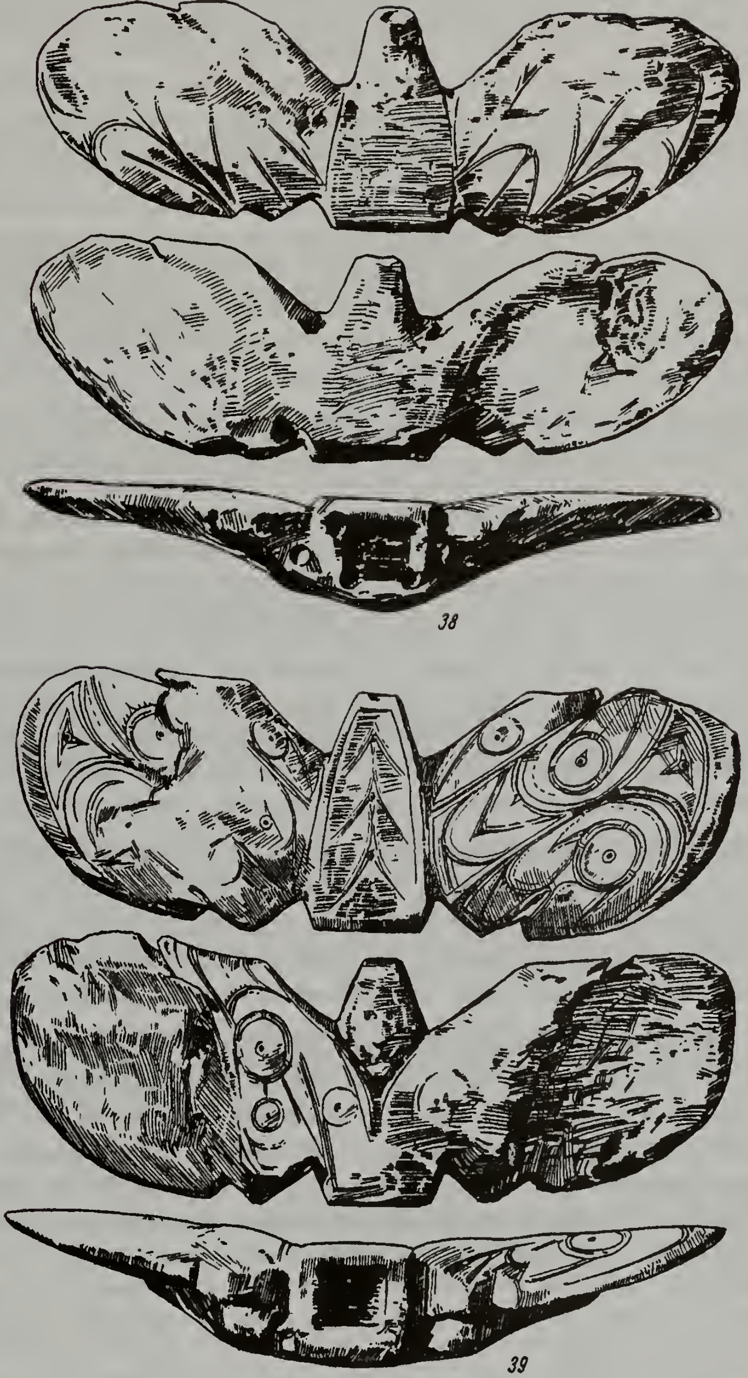

Figure 59 (½ natural size). "Winged objects": 38—from Burial 49b(62); 39—from Burial 49c(62).

In its form, the "winged object," with its outspread wings artistically carved from walrus tusk, is reminiscent of a butterfly. In several cases, the top and bottom of the object is decorated with a fine curvilinear design and sometimes with semi-sculpted images of sea-mammals heads and stylized faces.

There is usually a shallow slot in the forepart of the "winged object." Under the wings, in the thickest part of the object along the sides, there were two drilled holes that are sometimes connected by a special slot in the forepart of the object. In the back, between the holes, there is carved a depression—a socket.

This description basically fits most "winged objects" from the Uelen cemetery, with the exception of those found in Burials 2, 6, and 18. The "winged object" from Burial 16 (Fig. 50:11) has a special form. It has with two pairs of small wings along the sides, and is not decorated. The bad condition of the "winged objects" from Burials sites 15, 16, and 18 (1959 excavations, Figs. 50:9, 10; 51:13) should also be noted.

Archaeologists are not aware of early forms of "winged objects," although their appearance in the form we know was undoubtedly preceded by a multi-century process of development.

The "winged objects" found in the excavations are dated to no earlier than the time of the Developed Old Bering Sea with the so-called Classic Old Bering Sea curvilinear decoration. Accepting its evolution into an ever more perfected form over the extent of several centuries, by the time of the Developed Bering Sea culture, these objects had become highly artistic sculptures.

Within the Old Bering Sea-Okvik period it is possible to trace the gradual simplification of the structure and decoration of "winged objects." Having attained its efflorescence at the time of the Developed Old Bering Sea, "winged objects," as items of material culture connected with sea-mammal hunting, gradually changed and became simpler. This is most obvious when one observes the example of a multicomponent burial from the 1960 excavations at the Uelen cemetery (Arutiunov and Sergeev 1961).

This complex, consisting of three identically oriented graves lying one above the other, Burials 2, 3, and 4 (Figs. 18, 19), is of exceptional interest to those investigating early Eskimo cultures because of its clear stratigraphy. It is therefore necessary to describe in detail the position of the skeletons to show the large chronological gap between the interment of the upper and lower skeletons, because in both Burials 2 and 4, "winged objects" were found that differ very sharply in both construction and decoration.

Burials with multi-layered floors had been found earlier in the Uelen cemetery, but in this case, the graves are united by a common stonework but are no less clearly distinct from one another. Thus, the lower burial, 4 (Fig. 19), is separated from Burial 3, which lies above it not only by a thick layer of dirt (up to 0.50 m), but also by a wooden cover. Burial 3 is separated from lower layers by a wooden bed lying on specially placed slate slabs. The space between Burials 2 and 3 is not so large as between 3 and 4 (a total of 0.10 m), but the former pair cannot be considered a paired burial because they are separated from each other by a layer of earth and a wooden spacer. Judging by the inventory that accompanied the deceased, both Burials 2 and 3 were evidently men. In the upper Burial, 2, there was a complex of objects for sea-mammal hunting, while in Burial 3, there were arrowheads, a piece of an arrow shaft, and a man's knife.

The construction of the lower burial, 4, is interesting. It is bounded by an oval stonework of large rocks (Fig. 19).

The depth of the deposit from the surface to the upper point of the stonework is 0.10 meters, to the lower it is 1.05 meters. The skeleton is oriented to the east-southeast. The depth of the skull's deposition is 0.85 meters, and that of the feet is 0.75 meters. As already noted, above this burial were traces of a wooden cover separated from Burial 3 by a layer of earth. Under skeleton 4 was the decomposed skin of a polar bear and branches of shrubs strewn under the skin and lying almost even with the base of the wall, which was specially constructed for Burial 4. With time, earth, sand, and pebble deposits largely covered the stonework and the wooden flooring above Burial 4. A sod layer then formed within the stonework. Slate slabs, wooden bedding, and another burial (Burial 3) were later—perhaps several centuries later—placed on it. The deposits formed another sod layer that covered the stonework in some places. Burial 2 was set in the deposits. Thus, the stratigraphy indicates that, in this case, three temporally different burials are united by a common stonework.

The fact that all the burials occurred at large intervals of time is corroborated by the inventory found in them. For example, in the lower burial, 4, a "winged object" of the widely represented Old Bering Sea type with classic Old Bering Sea decoration was found (Fig. 52:17).

A "winged object" was also found in the upper site, Burial 2 (Fig. 52:18). It was clearly of a different form—gone were the slits along the sides, and the decoration had acquired Punuk-type features, such as depressions in the centers of circles.

It should be noted that in the burials containing objects of material culture typical of the Old Bering Sea (that is, objects resembling the form decoration typical of that period), the "winged objects" had a strictly defined style and were ornamented with typical Old Bering Sea decoration (Fig. 52:1, 17). In the same burials that contained toggling harpoon heads, harpoon shaft heads, and several other objects that were somewhat altered in their construction, there were "winged objects" that differed from earlier forms both in structure (having no broad holes in the object's body) and in decoration (Fig. 52:2, 6, 18).

It is interesting to note that, in north Alaska, several "winged objects" with Punuk design were found. H. Collins believes that these objects approach the Punuk "trident" in form and date to early Punuk (Collins 1937:197, 198, Fig. 23).

Such tridents are not represented in the materials found in the early Chukotka cemeteries. However, late Old Bering Sea "winged objects" found in the Uelen and Ekven cemeteries are reminiscent of the Punuk trident form.

Several publications dedicated to the early material culture of the Alaskan Eskimos, which include both art and sea-mammal hunting implements, describe several different "winged objects" (Collins 1937:42, Figs. 4; 12:1–4; 20; 21:1–5; Rainey 1941:521, Figs. 1–4). Research on objects found during archaeological excavations is closely intertwined with both the ethnography and the folklore of the Eskimo people.

Therefore, only by using both archaeological material and ethnographic and folkloric data is it possible to illuminate some of the enigmatic features of Eskimo archaeology from not only the Punuk but even the earlier Old Bering Sea-Okvik period.

Archaeologists working in Chukotka and trying to assign the "winged object" have drawn conclusions using ethnographic materials. Thus, Rudenko, writing about the "winged object" as early as 1947, stated: "Its purpose is not clear, though it was probably the representation of a bird, or more likely, a butterfly, with added head and tail, which was suspended on straps during a whaling ceremony" (Rudenko 1972:46).

I. P. Lavrov initially expressed a similar point of view; he thought of "winged objects" as "prototypes of realistic images of loons-gulls" (Lavrov 1947:125). Later, Lavrov changed his opinion and proposed a new hypothesis, trying "to give the most satisfactory clarification of the assignment of the 'winged object'" (Lavrov 1958:60). Lavrov explained:

> The enigmatic object is evidently a harpoon head of peculiar construction. In a front narrow slit is set a specially adapted foreshaft for seating a harpoon head of somewhat unusual form.…[T]he proposition [is] that a winged harpoon head was the basic part of an up-to-now-unknown harpoon—a ram—the force of the blow of which was increased by the forward thrust of the kayak (Lavrov 1958:60).

Leaving aside the above-cited hypothesis, it should nevertheless be noted that “winged objects” usually accompany male skeletons and Old Bering Sea-type of tools for sea-mammal hunting. In just such burials, were toggling harpoon heads, harpoon foreshafts, harpoon shaft heads, and harpoon ice picks, that is, a complete harpoon complex was found with the “winged objects.” Till now, archaeologists have found no heads of the unknown harpoon, or “ram.” In addition, ethnographic data indicates that the Eskimos, unlike the Aleuts, did not hunt whales from kayaks.[19]

It should be noted that the idea of a connection between the “winged object” and the harpoon complex is not new. As early as 1937, Collins wrote:

> [T]hese objects may have been ‘wings’ for the butt end of a harpoon or dart used with the throwing board. It will be recalled that all of them have a basal socket seemingly designed to hold a handle or shaft tightly in place. This may take the form either of a deep cylindrical pit in which a shaft would fit tightly, or a square or rectangular opening with lateral slots for a lashing. More significant, however, is the invariable shallow notch or groove at the end of the central projection. This is precisely the kind of pit that would be necessary to engage the bone or ivory spur at the end of the throwing board; the fact that such a pit is present on every specimen that has been found and that very often these pits show signs of wear, strongly suggest that they had a definite function. It would not be difficult to think of the ‘trident’ and ‘turreted’ forms as adapted to such a use, for they would probably have been as effective as the bone harpoon ‘wings’ used by the Greenland Eskimos. It must be admitted, however, that some of the larger and heavier ‘winged’ forms of the Old Bering Sea period would seem very poorly adapted to such a purpose, and this alone would be sufficient reason for looking for a better explanation (Collins 1937:201).

Trying to determine the assignment of “winged objects,” Dikov sees attributes of a shamanic cult. Further developing this thought, he writes that “the true so-called winged objects are probably the tops of shamans’ staffs. Artistically carved of walrus tusk in the form of a butterfly with outspread wings, they have a hole for seating on the end of a shaft.” Two such ‘winged objects,’ found by the author in 1956 in the Uelen cemetery’s Burials 2 and 4, had individual bone parts specially attached to them, which must have depicted the antennae of a butterfly. The butterfly’s wings were decorated with an intricate Old Bering Sea design on the flat side; on the other side was a female torso, very anthropomorphically formed, being clearly, though schematically, presented. It is known that the butterfly, according to Chukchi ideas, is a mythical opponent of the sea beast. In the form of a butterfly, ‘winged objects’ evidently illustrate the female progenitor, the object of the lineal matriarchal cult” (Dikov 1964:20–22).

Dikov mentioned “individual bone parts,” which, in his book, in his opinion, “depicted the antennae of a butterfly.” However, in the illustrations cited by the author, there is a bone part that the excavation materials attest was meant to be set in wood and was an inlay of wooden objects. Such Γ-shaped and nail-shaped items of walrus-tusk were widely represented in the Uelen cemetery (Fig. 42:2).

Concerning the small wedge-shaped part Dikov published in 1958, its being designated a “winged object,” seems correct (Dikov 58:37, 38, Fig. 16).

The validity of Dikov’s use of Chukchi folklore to determine the assignment of “winged objects” he found in the early Eskimo cemetery raises doubt. One must realize that “winged objects” had appeared on the Chukchi Peninsula by the early Old Bering Sea time, long before the Chukchi entered this territory and adopted the Eskimos' sea-mammal hunting technique and the names of several objects of material culture, for example, the toggling harpoon head and several others, that directly relate to this type of hunting.

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[19] In the legends large baidars are mentioned, from which whaling was carried out. With the low stability of the kayak and the use by the Eskimos in whale hunting of the heavy toggling harpoon with a long line and several inflated seal skin floats, the possibility of whale hunting from a kayak is excluded.

Concerning the female torso that Dikov sees on one side of the "winged object," his conclusion seems to be based on insufficient evidence.

The suppositions and hypotheses he made are undoubtedly of interest. However, they do not reveal the secret and enigma of "winged objects."

In trying to ascertain the specific purpose of the "winged object," we repeatedly encountered experienced Eskimo sea-mammal hunters. In Sirenik village, in 1955, the 70-year-old hunter Tagruge, having identified the "winged object" shown to him as *nanek'ytak'*, said that this object was a breasthook-a type of decoration-on a kayak. The no-less-experienced 72-year-old Eskimo Panauge, who claimed he had personally procured several bowhead whales, agreed with Tagruge.

In 1956, the Naukan Eskimo Ulgun also agreed with the Sirenik village hunters.

In 1960, an Eskimo from Naukan, Utoek, also said that the "winged object" was a breasthook on a kayak and is called *nanek'ytak'*. However, he added that it is more correct to call a "winged object" a *uyak'ug'mitak'*, which translates to "collar," from the Eskimo word *uyak'uk'* (neck), because the "winged object" joins all the wooden parts of the kayak at the bow.

In 1961, the Eskimo elder Nutetegin of Naukan said that as a child he had seen how the "winged object" was hung on the bow of a baidar that was setting off on a hunt. This object was called *ag'nok'*, that is, "helper," and sacrifices were made to it before the hunt. In order that the hunt be successful, this "helper" was "fed." Nutetegin said that the "winged object" was formerly also on kayaks. Nutetegin, when told of I. P. Lavrov's theory that the "winged object" was a whaling harpoon's shaft head, said that hunting elders believed the Eskimos had not hunted whales from kayaks. In Eskimo, the "winged object" is called *nanek'ytak'*, the word used for the breasthook on the modern baidar.

The *nanek'ytak'* on a baidar serves as a connecting link between the upper lateral stringers (*k'ulin'agi*) and the stem (*mayug'nik'*). It is interesting to note that the Eskimo word for "lamp" is *nanek'*, so the connection between *nanek'* and *nanek'ytak'* is beyond doubt.

It can be supposed that a *nanek'*, in the very distant past—even before the Eskimos arrived in the Bering Sea region, had been set on the bow of the boat, and its name was later transferred both to the kayak's breasthook (the "winged object") and to the baidar's breasthook.

Regarding the "winged object," it is noteworthy that, even now, the bow and stern of some kayaks of the Greenland Eskimos end in bone spheres—breasthooks.

Collection No. 3044, obtained from the Danish colonial administration in Greenland in 1924, is housed in the Museum of Anthropology and Ethnography, Academy of Sciences, USSR, in Leningrad (now St. Petersburg). No. 88 of this collection includes is a model of a one-hole kayak of the Greenland Eskimos with bone spheres on the bow and stern. No. 99 of this same collection is a genuine one-hole kayak, 5 meters, 32 centimeters long, with a maximum width at the hole of 0.47 meters. The kayak has a wooden frame and is covered with skin. At both the bow and stern a bone sphere—breasthook—was set to make the vessel more durable. These spheres held together the middleway, the upper stringers, and the stem, and it is possible that the breasthooks of the Greenland kayaks play the same role that the "winged object" did for the Bering Sea Eskimos in antiquity.

It is possible that serving as the breasthook on the bow of a kayak, the "winged object" was basically a decoration—an amulet—because the leather trim and thong rather firmly fasten all the parts of the kayak together without the help of any "winged object." The baidarkas of the Aleuts and the kayaks of the Eskimos of Alaska's southern coast have no bone decoration on the bows or sterns of their boats.

It is interesting to note that Aleut baidarkas did not always have even a wooden breasthook, or if they did, then it was covered by the skin cover of the kayak together with the lateral contour, middleway, and stem.

Describing the Aleut kayak's frame, R. G. Lyapunova notes: "The bow and stern ends of the frame consisted of expanded ends of the lateral strips; sometimes they set a small transverse plates (a breasthook and stern thwart) between the latter" (Lyapunova 1964:226).

For a long time, it was difficult to judge the assignment of "winged objects" based on the archaeological materials because the "winged objects" were either surface material or were found in graves.

It was not until 1955 that "winged objects" were uncovered in a cemetery.

But these "enigmatic objects" discovered in burials did not really corroborate that this complex structure was joined to other pieces of wood or bone.

In 1958, Uelen cemetery Burial 3 was excavated (Fig. 4). It occupies quadrant D–5, is located at a depth of 0.30 to 0.36 meters, and is oriented to the northeast. The skull found there was crushed, and only a few small bones were preserved. An inventory of walrus tusk was discovered in the grave. It included the head of a harpoon shaft, a tusk fragment, and a "winged object" (Fig.48:3). Of special note is the fact that wood fibers were found with the "winged object," and appeared to have been set in the body of the "winged object."

This find did not permit one to firmly conclude that a wooden object had been set in the body of the "winged object" because the burial was itself fragmentary, the depth of its deposition insignificant, and the wood in very bad condition.

In 1961, two "winged objects" were found in Burial 12 (Fig. 60) in Ekven cemetery; one had a wooden fragment of a rectangular shaft set in it (Fig. 53). This was the first time a "winged object" had been found in a cemetery in Chukotka and had a wooden part.

Possibly, this wooden part was a kayak's middleway and had been placed in the grave along with the "winged object."

This latter theory is based both on the archaeological materials and the ethnographic data: Eskimo informants reported that the "winged object" served as a connecting link—breasthook—between the upper lateral stringers (waterways) set in perforating holes in the body of the "winged object" and the middleway of the kayak, to which the stem was fastened.

Those "winged objects" that did not have perforating holes through which to attach the lateral strips (waterways) of the kayak, were fastened only to the middleway, which was set in a depression—the socket in the body of the "winged object" (Figs. 48:2; 49:6; 52:18). A thong was passed through special slots in the body of the "winged object," which pulled the kayak cover together on the middleway and strongly joined the pieces.

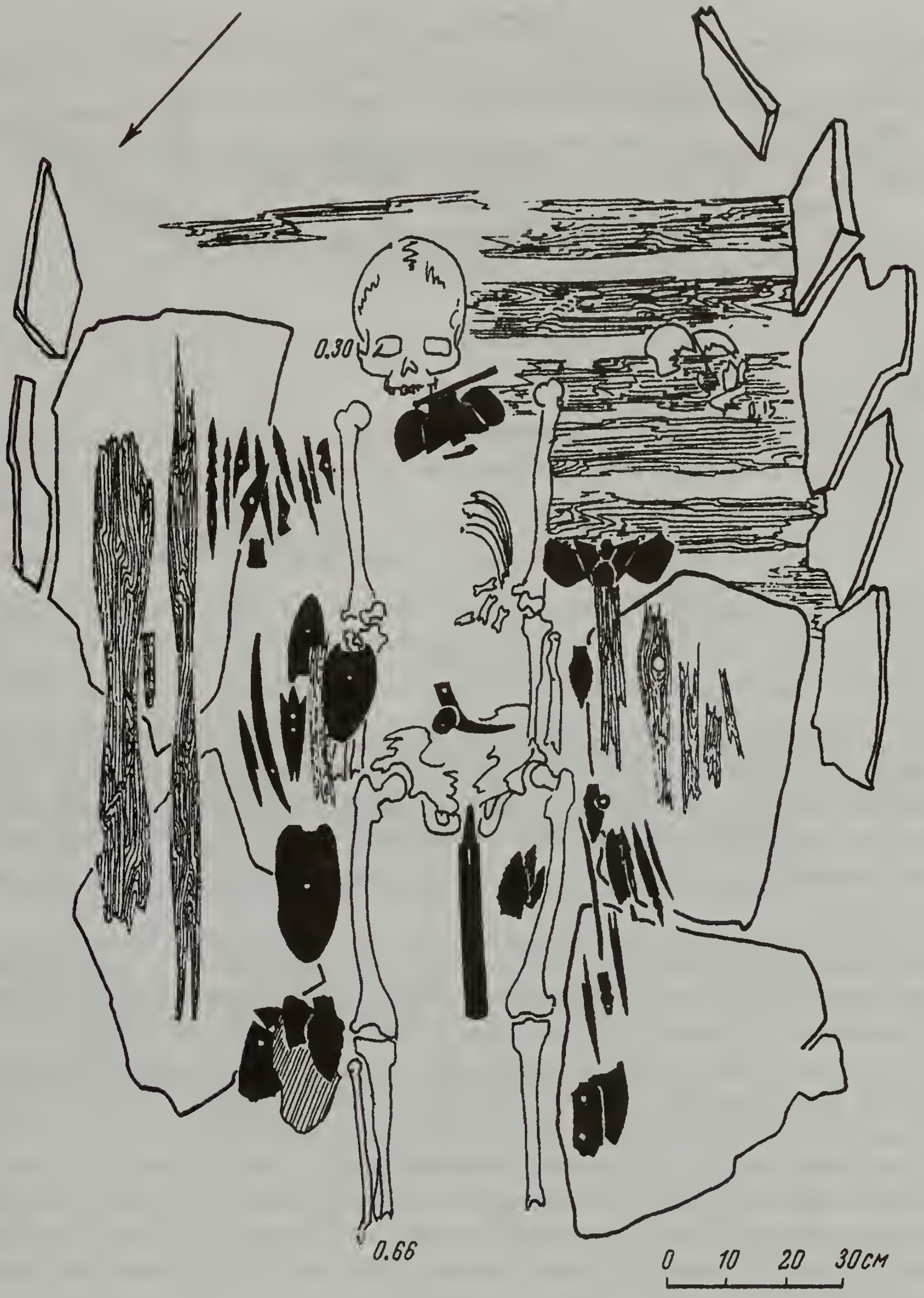

Figure 60. Plan of Burial 12(61) (Ekven cemetery).

Thus, the ethnographic material defining the "winged object" as a breasthook or distinctive rostrum on the bow of a kayak has, since the "winged object" with the wooden part was found, been corroborated by data from archaeological excavations. What is more, the Eskimo name for the "winged object"—*nanek'ytak'*—is one more confirmation of our proposition because the breasthook of a baidar is still called by this name. Parallels to a "winged object" can be found in the bone spheres on the bow and stern of Eskimo kayaks in Greenland, and, as Collins noted, in the canoe decorations of Micronesia.

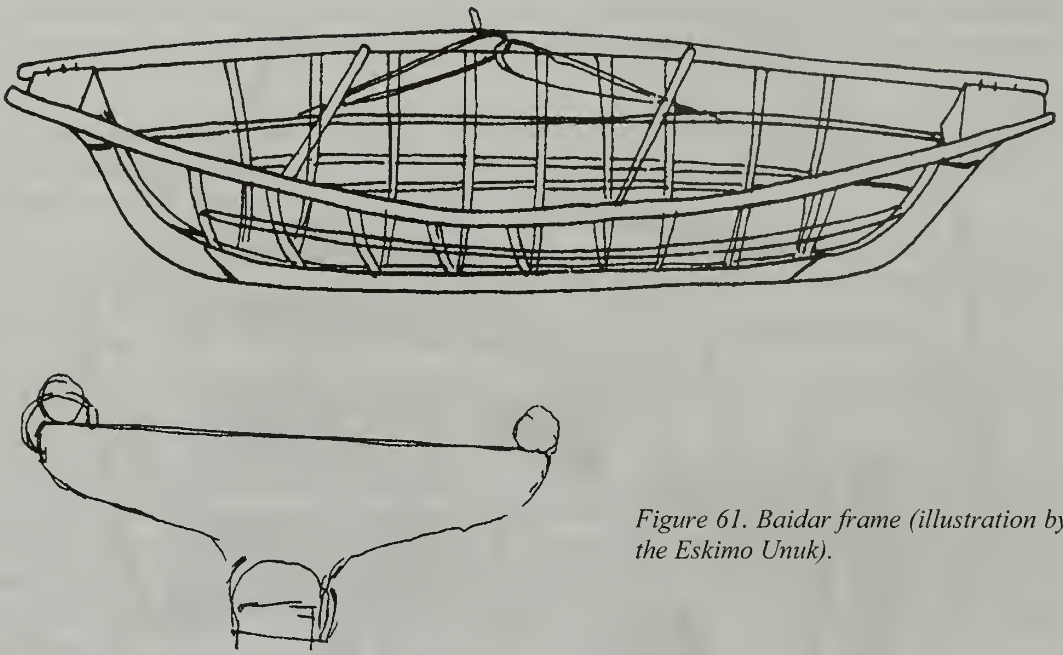

Figure 61. Baidar frame (illustration by the Eskimo Unuk).

Collins gives a plausible explanation for the use of "winged objects," writing:

> For the present, therefore, the interpretation of these curious objects must remain in doubt, but whatever it may be, it must satisfactorily explain the presence of the small notch at the upper end. This seemingly insignificant feature evidently had a function just as definite as the basal socket, and it will, no doubt, provide the final explanation of the manner in which these objects were used (Collins 1937:201).

As we have already noted, there is a shallow slot in the front part of "winged objects," in which a small foreshaft of special form was set. One such foreshaft, which accompanied several "winged objects" in a burial, is illustrated in Figure 48:4. Ethnographic materials explain the assignment of such a foreshaft, and the slots in the forepart of the "winged object." Today in Sirenik village, where ice at the end of April and into May does not permit launching whaleboats in the sea because of the ice packs at the near shore, hunters use large motorized baidars. They instead carry their baidars and outboard motors through the coastal ice and then launch it in the water. When the baidar is moving, the skin cover collides with small ice hummocks and sludge ice, which causes holes in and wear to the front of the baidar. To keep the skin cover from contacting sharp ice edges, the hunters put a special cover, sewn to fit the boat's bow, around the baidar's bow. This protective shield absorbs the blows of the ice chunks and protects the baidar's cover. This adaptation is called in Eskimo *nagrikhuak.*

It is possible that such a shield was put on the kayak's bow to protect the kayak's hide cover, which is even thinner than baidar's cover. Like the baidar's cover, the kayak's cover must have been cut to fit the boat's bow. It seems that a wooden part was sewn into the cover's narrow forepart. A thin part of a miniature foreshaft was set in this wooden piece, while its opposite flattened part was inserted into the slot in the front of the "winged object." The lateral sides of the shielding cover were fastened by thongs, as on a baidar, to the sides of the kayak.

Later archaeological and ethnographic investigation will undoubtedly add much new information to that cited above. It is also possible that this seemingly sufficiently substantiated hypothesis, like some others, will be thrown out. It is important that the mystery of the "winged object" be gradually revealed with each published archaeological find and thus becomes less of an enigma.

Chapter 6

Characteristics of Subordinate Forms of Tools of Early Eskimo Hunting

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As archaeological materials show, along with hunting sea mammals, the early people of Uelen engaged in other hunts as an important part of their economy of Uelen: taking tundra animals, bird hunting, and catching fish.

The tools they used in these occupations are examined in this chapter.

A substantial number of arrow points were found in the Uelen cemetery—172 specimens. In form and construction, they can easily be divided into types. We will try to analyze most of the material represented by these points.

The formal designations being proposed here for different types of arrows, distinct from the formal designations used for harpoon heads, are not universal and do not embrace all the forms encountered even within the framework of a single Eskimo cemetery. These designations are only for classifying the bone arrow points most characteristic of the cultures represented in the Uelen cemetery.

Based on their characteristics, these points can be assigned to three categories:

1. Bone points with a leaf-shaped body and a pointed end are designated by the letter M (Fig. 62).
2. Points that are round or elliptical in cross section and have a slot for seating a stone inset on the end are designated by the letter U (Figs. 63, 64).
3. Blunt points are designated by the letter T (Figs. 63:20, 23, 25).

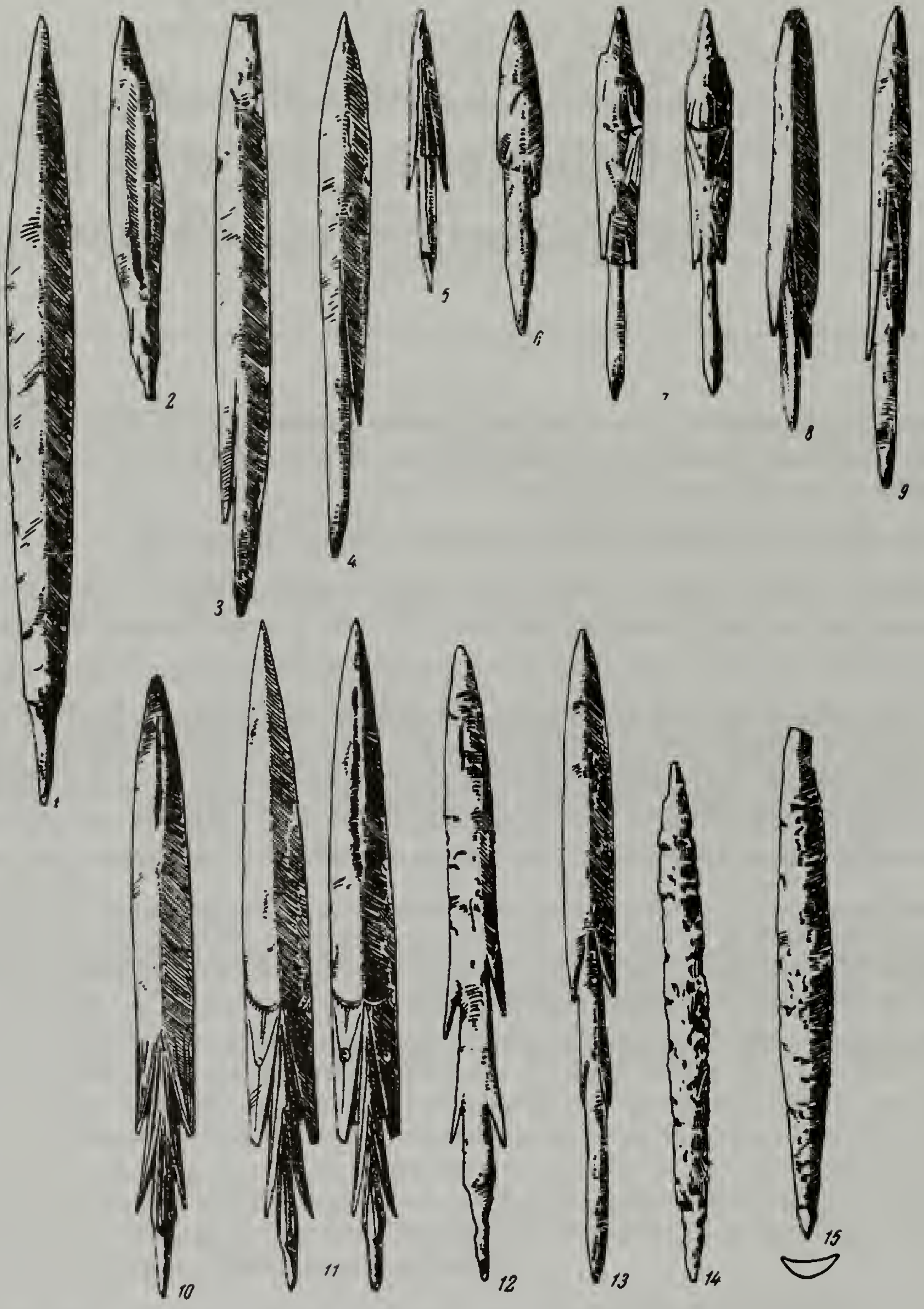

Figure 62 (½ natural size). Arrowheads of type MV(0–0): 1—from burial 16(67); 2—surface material; type MV(1–0); 3—from burial 9(58); 4—surface material 19(58); type MV(1–1); 5—from burial 17(57); 6—from burial 12(57); 7—from burial 13(57); 8—from burial 6(59); 9—from burial 19(57); type MV(2–2); 10—from burial 15(59); 11—from burial 15(59); 12—from burial 12(57); 13—from burial 19(57); 14, 15—poorly preserved objects from burial 17(57).

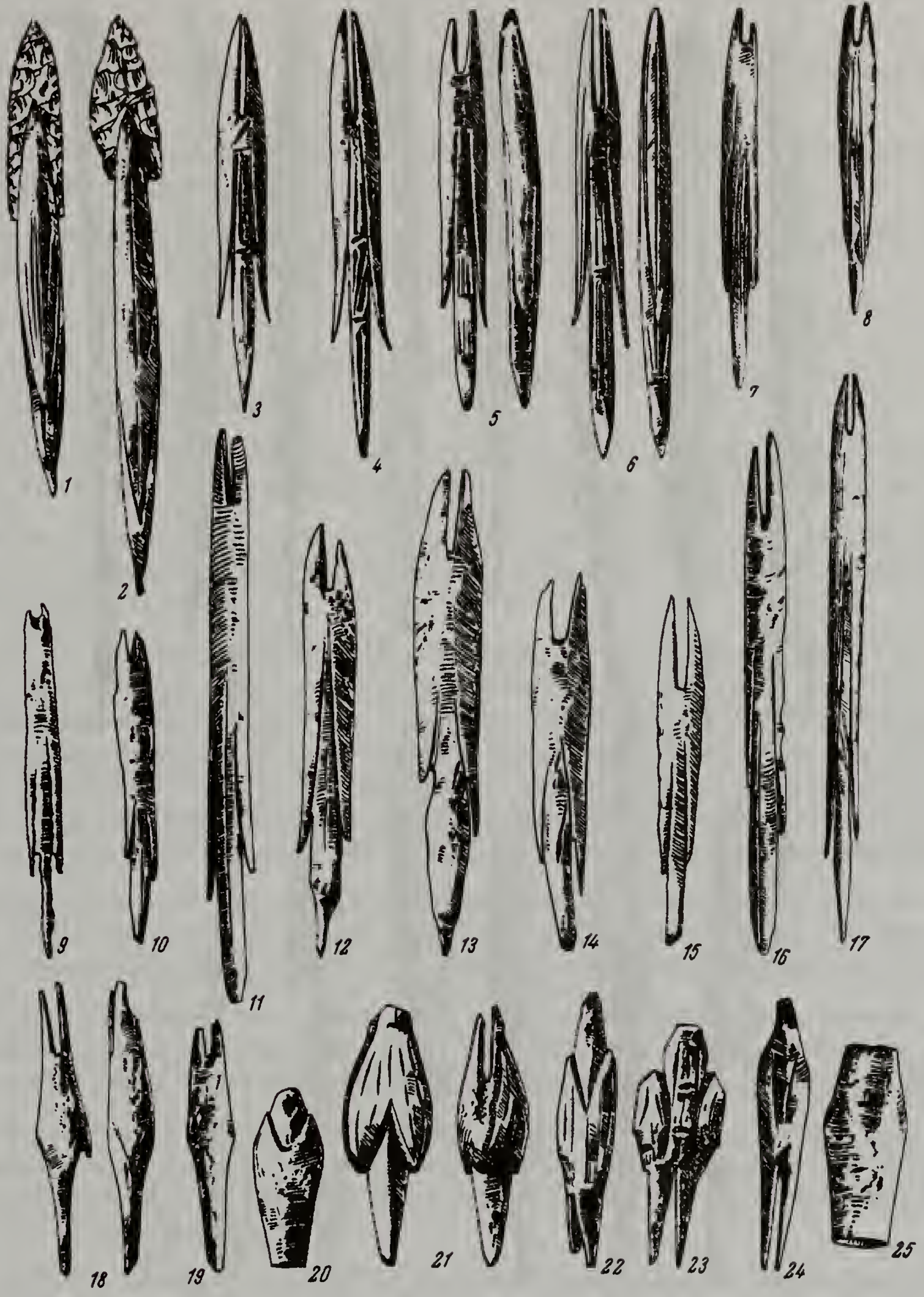

Figure 63 (½ natural size). Arrowheads of type UV(1–1): 1—from burial 18(59); 2—from burial 1(55); 3—from burial 15(59); 4—from burial 16(59); 5—from burial 15(59); 6—from burial 15(59); 7—from burial 6(59); 8—from burial 6(59); 9—surface material; 10—from burial 2(60); 11—from burial 18(57); 12–15—surface material; 16—from burial 19(57); 17—from burial 7(59); arrowheads of unusual forms and blunts; 18—from burial 17(59), type UV(1–0); 19—from burial 13(59); 20—from burial 4(60); 21—from burial 15(59); 22—from burial 8(59); 23—from burial 7(59); 24—from burial 16(59); 25—surface material 19(58).

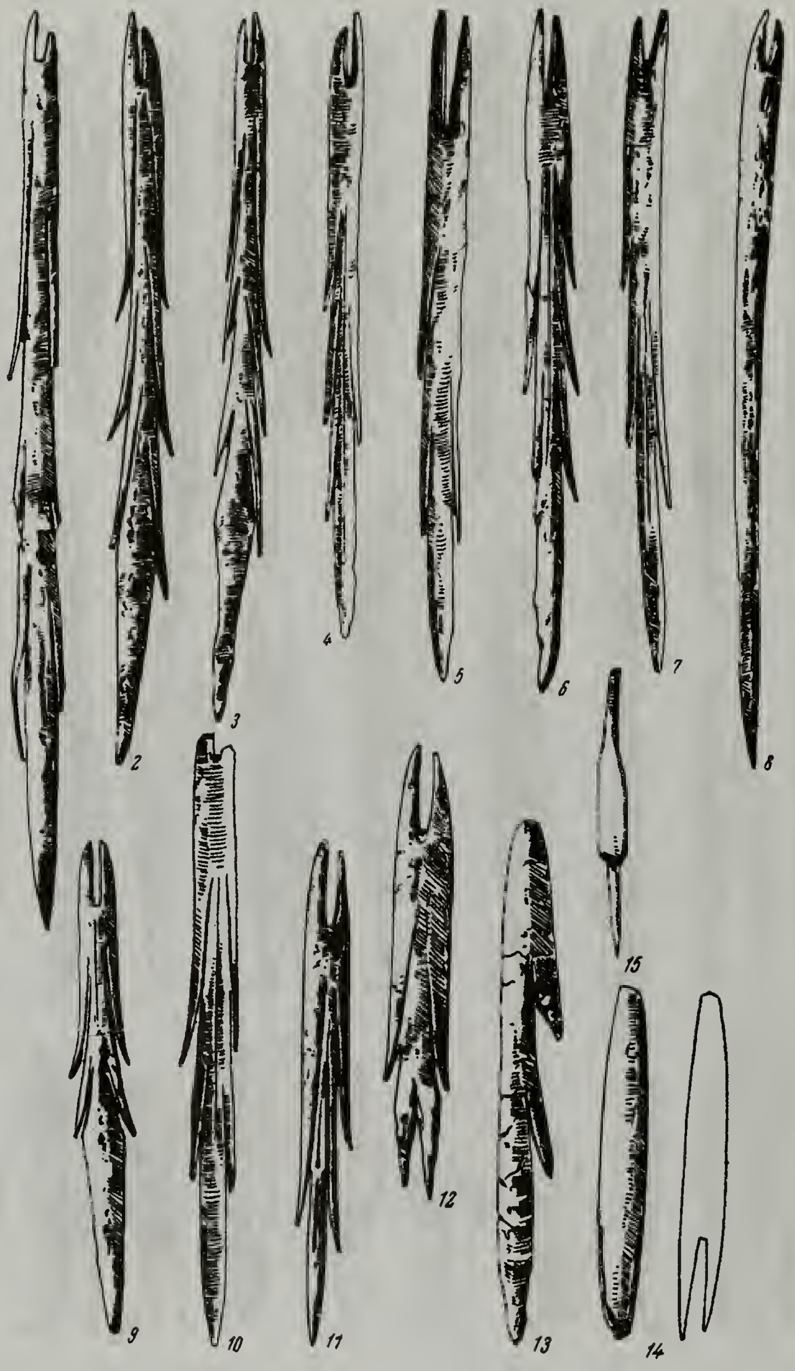

Figure 64 (½ natural size). Arrowheads of type UV(3–3): 1—from burial 22(59); 2, 3—from burial 19(58); 4—type UV(3–1) from burial 19(57); 5—type UV(2–1) from burial 19(57); 6—type UV(3–2) from burial 19(58); 7—type UV(2–1) from burial 19(57); 8—type UV(0–0) from burial 19(58); 9—type UV(2–2) from burial 19(58); 10—type UV(2–2) from burial 19(57); 11—type UV(2–1) from burial 15(59); 12—type UA(1–1), surface material (58); 13—arrowhead close in form to the head of a non-toggling harpoon from burial 19(57); 14, 15—items reminiscent of arrowheads found in quads A-25 and A-26 together with the skull of a dog.

Based on the method of fastening the point to the wooden shaft, three more basic types of arrows can be distinguished:

1. Arrows with a pointed tang, for seating into a depression in the shaft, are designated V (Figs. 63, 64).
2. Arrows with a stem bifurcated like a swallow's tail, into which is squeezed the narrow end of the shaft, are designated A (Fig. 64:12).
3. Arrows having a cylindrically drilled hole in the basal part of the tang, into which the cylindrical shaft is set, are designated E (Fig. 63:20, 25).

Almost all the arrows found in the Uelen cemetery belong to the basic types MV, UV, or UA, and to the group T with variants TA and TE.

Most arrows are equipped with barbs, but there are not always the same number of barbs on the sides of a point, as reflected by the parenthetical numbers following the letter designation of the type.

The most frequently encountered type of point in the Uelen cemetery is UV(1–1), that is, a point having two symmetrically located barbs. As can be seen in the table in this section, a total of 68 such specimens were found in 18 burials.

Variants of this type, but with three barbs on each side, are represented a total of 17 specimens in eight burials. In six of the eight sites, the multibarbed variants UV(2–1), UV(2–2), and UV(3–2) accompany the basic and more numerous type UV(1–1). Only in graves 19(58) and 21(59) were UV(3–3) points found; these were unaccompanied by UV(1–1) points. But in Burial 19(58), there were UV(3–2) and UV(2–2) points in addition to two UV(3–3) points. If this combination is not accidental, which is likely, considering that there was a total of only such two burials, then the distribution of UV points can be represented thus: in the overwhelming number of burials, that is, 18, the UV(1–1) points predominate.

In six cases, this form of arrow point is accompanied by only a small number of finds, which are typically only single points with of more barbs. Two burials are characterized by UV(3–3) points. In one of them, 19(58), there are also points with fewer, but nevertheless a significant number of, barbs.

Type UV(1–0) arrow points, that is, those with a slot for an end blade and only one barb, are represented in Burial 16(59) by a single specimen. However, in both cross section and silhouette, this point differs from other UV points and can hardly be viewed in the framework of the general typology.

The small number of arrow points with a slot for an end blade but without lateral barbs should be examined separately. In the table, they are designated UV(0–0), but in this case the code does not mean the group is typologically uniform. The point UV(0–0) from Burial 15(59) is almost identical in silhouette to point UV(1–0) from Burial 16(59).

Points UV(0–0) from Burials 22(59), 6(58), and 20(58) had deteriorated, like several other objects in these burials. In cross section and silhouette, they generally do not differ from points UV(1–1) and are possibly poorly preserved UV(1–1) points.

Three UV(0–0) points from Burial 19(58) stand alone. This grave occupies a special place in a series of burials that contain arrows. It is very deep, covered by two other burials and, consequently we know it was made earlier than the others. In its inventory, excepting a button and two beads, there are only seven arrow points. As we noted above, two of them were six-barbed type UV(3–3) arrows. One belongs is a type UV(2–2) and one is UV(3–1), but it is possible that some of the latter's barbs were not preserved.

Considering points typical for Uelen that are of medium size and have one pair of symmetrical barbs, this burial's points, which are very long (20 cm) and either entirely lack barbs or have them in large number, appear unusual.

On the whole, arrows from Burial 21(59) have a similar appearance, but these, excepting one UV(3–3) point, were very poorly preserved.

Both these burials lacked toggling harpoon heads.

In the Uelen cemetery, only one arrow point (with a slot for an inset) has the "swallow tail"-type of attachment. This UA(1–1) arrow, unfortunately, was not found in the grave itself but rather in the backdirt of a 1955 trench.

However, the A ("swallow-tail") method of attachment, like the E (cylindrical) method, was used on arrows with blunt points, which were intended for hunting birds. These blunt points were found in the same graves as the pointed points and the MV and UV points with stone end blades (insets), which were attached with the aid of a pointed stem.

It should be noted that, although in the Uelen cemetery the combination of a slot for an end blade and a bifurcated stem were encountered on only a single specimen, found accidentally, in several other early Eskimo sites such finds were not unique, although they were infrequent. Several arrows were found in burials at the Ipiutak cemetery (Burials 103, B–85, B–I, 3, 86, 87) (Larsen and Rainey 1948:Pls. 78, 82). Such points were also found in the Ekven cemetery (Arutiunov and Sergeev 1962:17, Fig.2:8).

Among the MV points, that is, those with a pointed, leaf-shaped form, 20 of the 37 specimens were type MV(1–1). Type MV(1–1) was found in nine graves; in seven of these it was found with UV(1–1) points. Other MV variants, which differ only in the number of barbs, were also found in the same combination. Only type MV(0–0), that is, leaf-shaped points lacking barbs, found in graves 16(57) and 20(57), occupies a special place inasmuch as no other types of points were found with them.

Unfortunately, dating these burials is rather difficult: toggling harpoon heads and other clearly dated items are absent, and the rather poor inventory does not represent anything specific.

As can be seen in Table 7, different barbed MV variants, almost all UV variants (except for the longest multibarbed and barbless variants), and blunt arrows (TA and TE) coexist in the same graves, and consequently we know they were used at the same time by one and the same people. However, it must be supposed that the different types and variants served different purposes. Especially characteristic in this sense is Burial 16(59), where, along with seven UV(1–1) points and four MV(1–1) points, there are two MV(2–2) points, one point with the special formula UV(1–0), and one blunt point TA.

In other burials with many arrows—19(57), 20(58), 6(59), 15(59), 17(59), and 18(59)—approximately these same variants, though less complete, are represented in similar proportions.

Almost everywhere, type UV(1–1) predominates and type MV(1–1) is represented in significantly lower numbers.

There are usually no more than one or two specimens of the more multibarbed MV and UV variants. Points of a specific form fall into the group of individual finds: UV(1–0) in Burial 16(59), UV(0–0) and a point of special form in Burial 15(59). Different forms of blunt points are likewise grouped as individual finds.

We will now try to compare the location of types of arrow points in the Uelen cemetery with the location of toggling harpoon heads. As already noted, two types of arrow points were not found with the most widespread arrow points; that is, leaf-shaped arrow points MV(0–0) and long points UV(3–3) and UV(0–0) are not encountered with harpoons in the Uelen cemetery. As for the most characteristic complex of arrow points, UV(1–1) and MV(1–1), these are often found with classic Old Bering Sea harpoons of the type 2A2xM3 and 2A2v2M3.

There is just such a combination in Burials 1(55), 18(57), 19(57), 7(58), 14(58), 6(59), 7(59), 16(59), 18(59), 22(59), and 2(60).

The same combination was noted for type TA blunt arrows in Burials 6(59), 7(59), and 16(59).

In site 20(58), an approximately identical complex of arrows, including types UV(1–1), UV(2–1), UV(3–2), and MV(2–1), accompanies an unfinished type 1A1XP harpoon head, which, in proportion and decoration, is rather close to the Okvik forms.

The complexes of arrow points in Burials 15(59), 16(59), and 17(59) strongly resemble one another. Regarding harpoon heads, there are Old Bering Sea 2A2–M3 forms in site 16(59).

In Burials 15(59) and 17(59), there are no such harpoon forms. However, in all three of these burials there are 1BXM3 toggling harpoon heads, which often accompany classic Old Bering Sea forms, and, within the framework of the three burials, they are almost identical in outline, proportions, and decoration (Fig. 36:125–127, 129, and 135).

Burial 17(57) stands somewhat alone among the others both in the complex of harpoon inventory and in the complex of arrows. Of the four harpoon heads found here, two, 1A2y1PC(0–1) (Fig. 26:28) and 1A2XPc(1–1) (Fig. 26:29), belong to the Birnirk type, as does harpoon 1A2Xy2P approaching it (Fig. 26:30).

The fourth head is more likely Okvik—its formula is 1BXM5 (Fig. 26:27). Thus, this burial is assigned to a rather late time, specifically to the Birnirk stage, with some traditions of the outgoing Okvik forms. In this burial, two arrows we assigned to type MV(1–1) were found. One of them is no different in form from other specimens of this type but bears a distinctive decoration. The second arrow can only be tentatively assigned to this type inasmuch as it is not leaf-shaped in cross section, but rather rhomboid, and very deep slots running along almost the whole body of the arrow separate its barbs. Such a form is not characteristic for Eskimo bone arrows and is most reminiscent of metal forms.

Besides these points, there were two items in the same burial that were so poorly preserved that we did not dare call them arrow points, but nevertheless we place them among the illustrations for comparison.

If these objects can be designated as arrow points, then it would follow that they be assigned to type MV(0–0). One of them is clearly concave in cross section, the other clearly rhomboid (Fig. 62:14, 15).

The forms of arrow points found in the Uelen cemetery cited above are the bearers of cultures that preceded the Old Bering Sea culture and also of the later influences of ethnic contacts and intertribal exchange.

In this scheme, stone end blades of arrow points are of special interest (Fig. 65). Two of them, found in Burial 2(57), copy in their form stone arrow points that are widely found in North America (Fig. 65:1, 2). These points are elongated ellipses or rhomboids, with a widened basal part similar to a fish tail. The point is very reminiscent of the shape of a fish, which is emphasized even more by two small lateral projections on the broadest part of one of the points found.

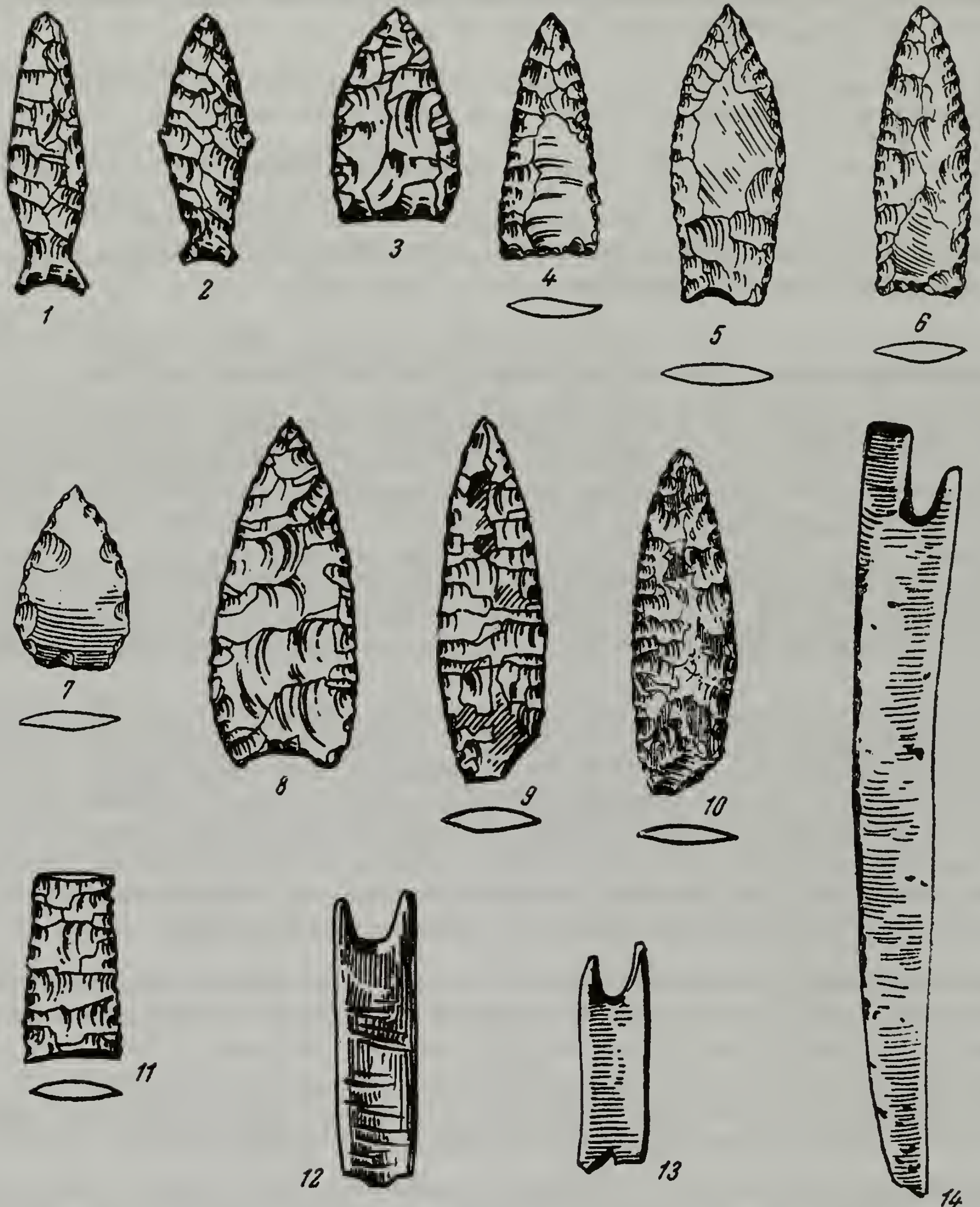

Figure 65 (9/10 natural size). End blades of arrows: 1–3—from burial 1(57); 4–7—from burial 6(95); 8—from burial 26(58); 9–11—from burial 22(58); supports for a bow sting; 12, 13—from burial 19(57); 14—from burial 2(57).

It should be noted that points of this form, made from siliceous stone, were attached directly to the arrow shaft. However, these two stone points are exceptions among the Uelen cemetery's materials.

It should be noted that just like toggling harpoon heads' end blades, arrows' stone end blades set in position in the bone point are only very rarely encountered. Usually, the bone arrow points found in graves lack insets, or the insets are found separated from the point. On the other hand, insets are encountered in several of these graves where there are no bone points; that is, the same picture is repeated that we saw in connection with end blades and toggling harpoon heads when we examined the harpoon complex.

Unlike toggling harpoon head end blades, which were primarily made from slate and worked by grinding, arrow point end blades were made of siliceous stone and carefully retouched. There is almost no trace of grinding.

Although, as we have already indicated, stone points for arrows were usually found separate from bone points, nevertheless, judging by their form, they were almost all intended for use with bone points. In most cases, they are very flat in cross section and have an elongated leaf-shaped form in their front part in contour (Fig. 65:5), but on rare occasions they are almost triangular (Fig. 65:4). The basal part of most of them somewhat narrows (Fig. 65:9) and is either straight (Fig. 65:3) or has some concavity (Fig. 65:8). The elongated leaf-shaped points with a rounded basal part are almost never encountered.

No bow limbs were found in the Uelen cemetery. However, in materials from the Ekven cemetery, which are assigned to the Bering Sea and Punuk periods, two bows and arrows were found, which permits assigning these tools to the indicated stages of early Eskimo culture. It is very interesting that the form of the bow from the Old Bering Sea period was not modified in the Punuk and is copied by ethnographically recorded bow shafts, and we know that it existed among the Eskimos almost to the end of the nineteenth century.

In the Uelen cemetery, individual parts of bows were found. Antler plates were set in the limbs of the bow and served for attaching and stretching the bowstring (Fig. 65:14). Objects represented in Figure 65:12 and 13 could be so assigned. However, inasmuch as they are incompletely preserved, their assignment cannot be reliably determined. It is possible that they were part of an arrow and were set in its tail to hold the string.

We found no plates to protect the left thumb from the string's blow.

Concerning dart points, they were, as a rule, made of slate and are reminiscent of harpoon head end blades. However, unlike dart point end blades, they have tangs. The blades are almost all elongated triangles that curve very slightly at the edges. Their cross section, as a rule, is a flattened rhomboid. Like the tang, the blade also has a flat surface, which forms a triangle (Fig. 66:15–19).

One tool that could easily have been used for hunting sea mammals or animals in the tundra was the spear. Hunters killed harpooned animals with them and struck animals at the ice haulouts and at breeding grounds where they gave the killing blow to the bowhead whale. The spear was the most efficient tool for protection against a bear.

In the Uelen cemetery, there were a substantial number of stone spear points. All were made of siliceous stone (Fig. 66:1–11). Flaking, retouching, and grinding were widely used in their preparation. As a rule, stone spear points are small, and as informants attest, their size contributed to their great durability—a long point breaks easily when it hits an animal's bone. The spear points are oval or triangular, and the basal part of most of them narrows somewhat, taking the form of a rectangular tang.

Unlike knives, which sometimes resemble spear points, as we have already noted, spear points are usually smaller than knives and made not of slate but of siliceous stone.

Bird spears are auxiliary tools closely connected with sea-mammal hunting. They were thrown from kayaks and baidars at floating game using a spear thrower. It is interesting to note that, although a substantial number of bird spears and darts were found in the Uelen cemetery, spear throwers were not found, which may be because wooden items in this cemetery deteriorated.

All the central and lateral teeth of bird spears were made of walrus tusk. These teeth (prongs) always have a hole in their basal part through which a thong (or sinew cord) was passed to fasten them to the shaft. The central teeth were set in the shaft by their back end, which turned into a cone.

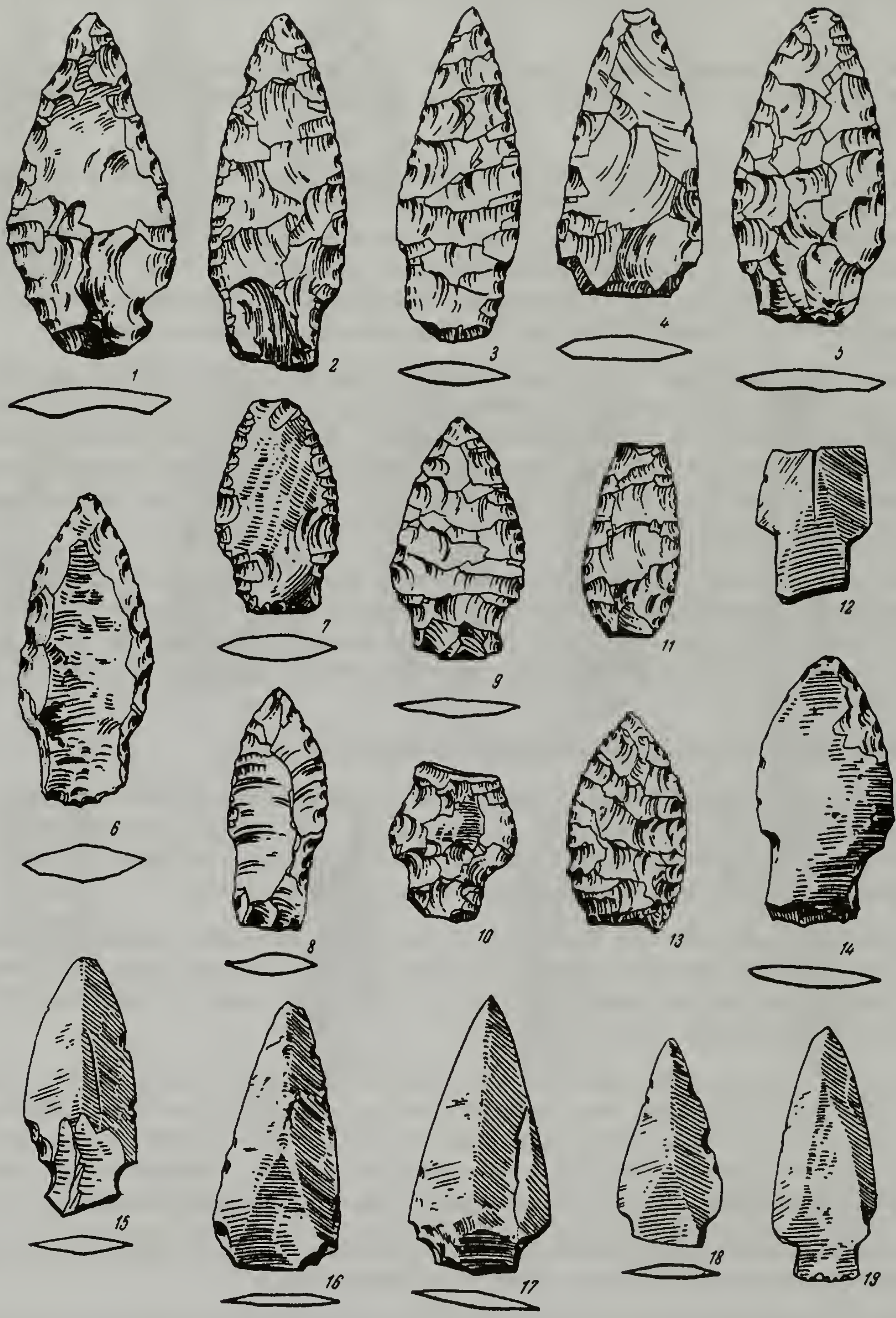

Figure 66 (½ natural size). Heads of darts and small spears: 1—from burial 7(57); 2—from burial 8(58); 3—from burial 23(58); 4–6—from burial 7(57); 7—from burial 22(58); 8—from burial 23(58); 9—from burial 7(57); 10—from burial 9(58); 11—from burial 7(58); 12—from burial 22(58); 13—from burial 17(59); 14—from burial 7(57); 15—from burial 22(58); 16—from burial 19(57); 17—from burial 22(58); 18—from back dirt of the 1955 trench; 19—from burial 6(59).

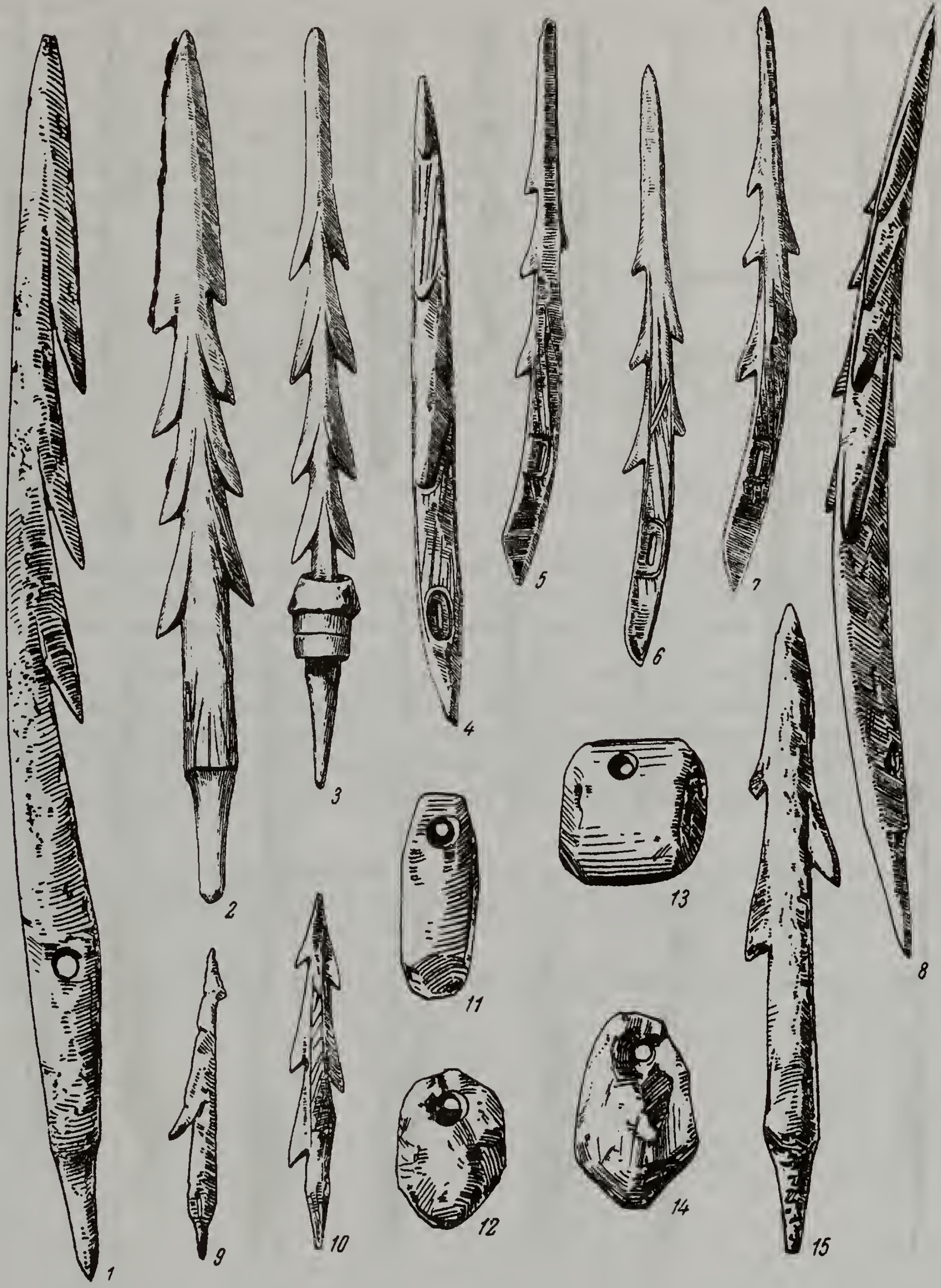

Figure 67 (½ natural size). Leister-like objects: 1—from burial 16(57); 8—from back dirt of a trench (55); 9—from back dirt of a trench (55); 10—from burial 8(59); 15—from burial 15(59); central prong of a bird spear; 2–4—from burial 6(59); lateral prongs of a bird spear; 5–7—from burial 6(59); bolas; 11–14—from burial 1(57).

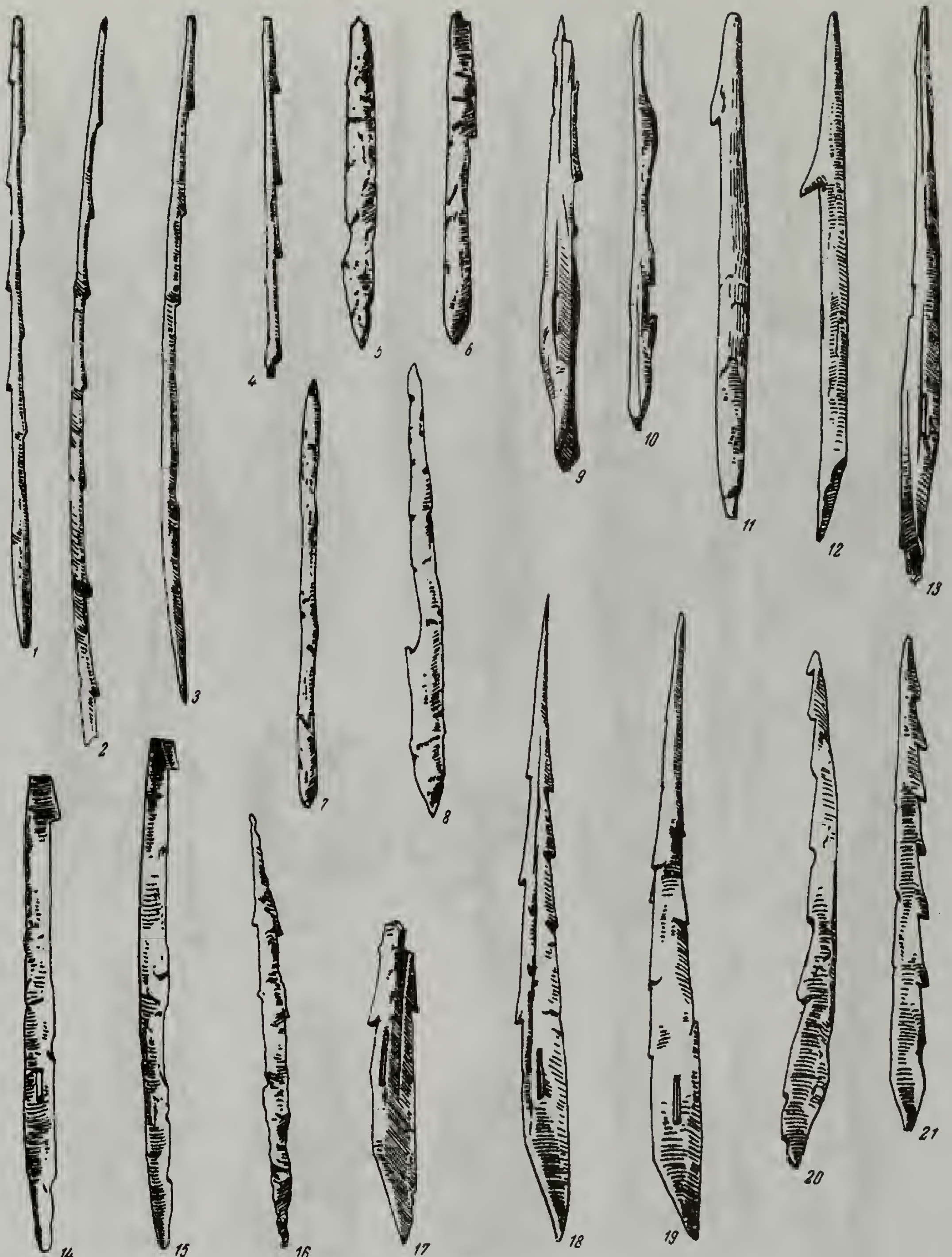

Figure 68 (½ natural size). Teeth of bird spears and pieces of them: 1–8—from burial 12(58); 9–13—from burial 22(58); 14, 15—from burial 15(57); 16—from burial 17(57); 17–18—from burial 13–14(57); 19—from burial 10(57); 20, 21—from burial 1(57).

One specimen from Burial 6(59) had a special connecting sleeve to attach it to a shaft (Fig. 67:3). The lateral teeth on the basal part were slightly curved and quite flattened. It should be emphasized that the teeth in several cases were decorated.

Thus, in Burial 6(59), decoration on the bone parts of the bird spear was identical to that found on toggling harpoon heads from this grave. In addition to bird spears, grappling tools (bolas) were used. These bolas, made of walrus tusk or walrus teeth, were used on land (Fig. 67:11–14). Six or eight walrus teeth were connected to form the bola, which could be thrown into a flock of ducks to strike then wind around and entangle a bird with the sinew cords.

At present, the bola, like the sling, is a child's toy, though at the beginning of the twentieth century, it was still used in hunting.

The central points of bird spears and the points of leisters (non-toggling harpoons) are sometimes difficult to tell apart. Object 8 in Figure 67 could be either a part of a bird spear or the point of a leister. However, object 1 in the same illustration is the point of a leister. Objects 9, 10, and 15 are most probably the heads of leisters.

Leisters and non-toggling harpoons were used for taking salmonid fish as they swam into the mouths of rivers and lagoons to spawn.

Other objects in Figure 70 are also connected with fishing. Some of them can be classified as barbs of a complex compound hook used to catch flounder (Fig. 70:3–5). The barbs, which are large but similar in form, could have been lateral auxiliary teeth on a salmon leister (Fig. 70:6 and 8).[20]

There were almost no fishhooks in the Uelen burials, except in Burial 23(59), where a walrus-tusk hook for catching cod was found (Fig. 70:7). Such hooks are well known ethnographically. They were fastened four or six to a weighted lure. Similar weights are represented in Figure 70:1 and 2. It can be supposed that the early Uelen people, like the modern Eskimos, used these tools for fishing with a baleen fishing line. However, baleen items, like wooden fishing-equipment parts, disintegrated in the Uelen cemetery.

In addition to the tools for fishing described above, there are larger hook-like items of very similar form that had quite a different purpose: these hooks were used for pulling game aboard a baidar or kayak (Fig. 70:9, 10, 13).

The hooks in Figures 70:11 and 12 were most probably used domestically to hang various items.

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[20] Modern forms of a similar tool are published in the works of Nelson (1900:175, Tab. 67, Figs. 3, 5).

Table 7. Structure of Arrowheads from the Uelen Cemetery (Excavations 1955, 1957–1960), Expressed in Tentative Designations.

	1955	**1957**						**1958**								
	Burial 1	Burial 12	Burial 16	Burial 17	Burial 18	Burial 19	Burial 20	Burial 4	Burial 6	Burial 7	Burial 14–15	Burial 19	Burial 20	Burial 24	Burial 26	Surf. Mat.
MB (0 : 0)			1				4									
MB (1 : 0)																2
MB (1 : 1)		1		2		1										
MB (3 : 2)													1			
MB (2 : 1)						1							1			
MB (2 : 2)		1							1			3				
YB (0 : 0)													1			
YB (1 : 0)																
YB (1 : 1)	3				1	1				1	7		3	1	1	6
YB (2 : 1)						2					1		2		1	
YB (2 : 2)						1						1				
YB (3 : 1)						1										
YB (3 : 2)												1	1			
YB (3 : 3)												2				
YA (1 : 1)																1
TA																
TE																1
Special type	1															
Fragments								1					5			1
Total	4	2	1	2	1	7	4	1	1	1	8	7	14	1	2	11
Yearly total	4	17						46								

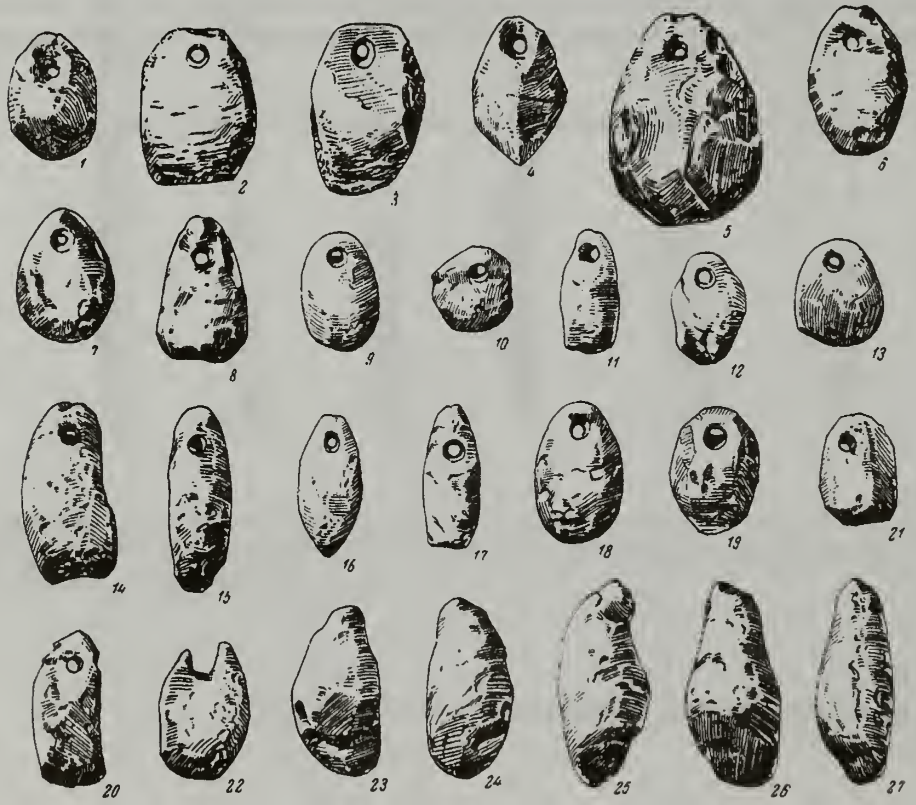

Figure 69 (½ natural size). Bolas: 1–5—from Burial 1(57); 6–8—from Burial 6(57); 9–11—from Burial 15(57); 12—from Burial 4(57); 13—from Burial 4(57); 14—from Burial 1(57); 15—from Burial 4(57); 16—from Burial 4(57); 17–18—from Burial 17(57); 19—from Burial 3(57); 20–21—from Burial 4(57); 22—from Burial 8(57). Walrus teeth (bola blanks): 23–27—from Burial 22(58).

	1959										1960		
	Burial 6	Burial 7	Burial 15	Burial 16	Burial 17	Burial 18	Burial 21	Burial 22	Burial 23	Surf. Mat.	Burial 2	Burial 4	Burial 5
MB (0 : 0)													
MB (1 : 0)									1	2			
MB (1 : 1)	2		5	4	1	3							1
MB (3 : 2)													
MB (2 : 1)													
MB (2 : 2)			3	2									
YB (0 : 0)			1					1					
YB (1 : 0)				1									
YB (1 : 1)	9	6	13	7	1	4		2		1	1		
YB (2 : 1)			2			1							
YB (2 : 2)													
YB (3 : 1)													
YB (3 : 2)													
YB (3 : 3)													
YA (1 : 1)				1			1						
TA	1	1											
TE												1	
Special type			1										
Fragments	3	2	2		4	2	6	4		1			
Total	15	9	27	15	6	11	7	7	1	4	1	1	1
Yearly total	102										3		

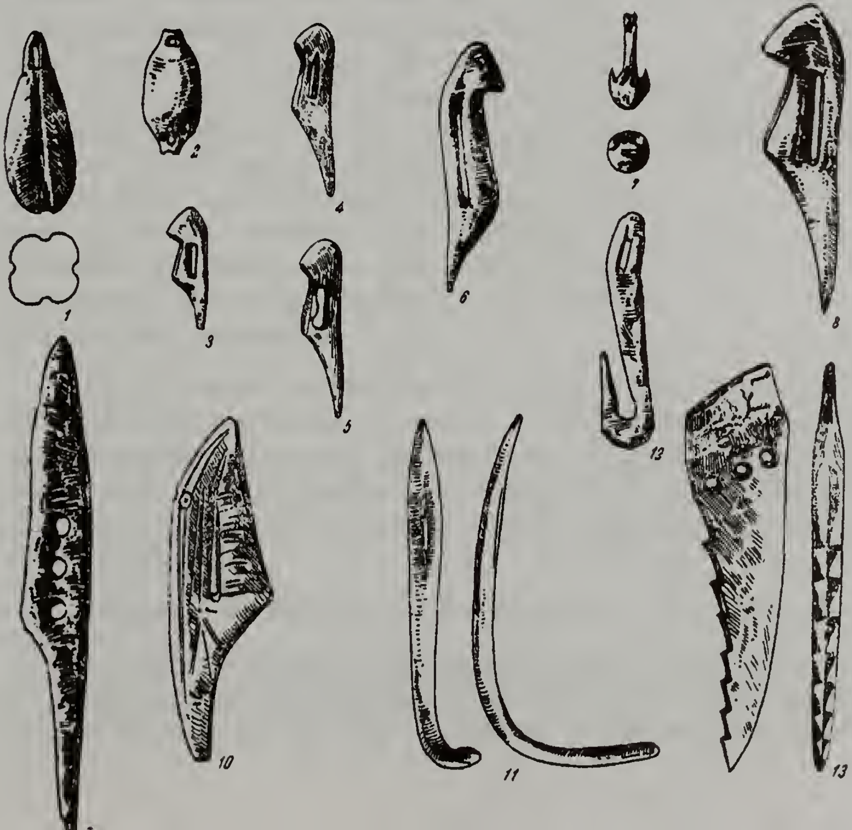

Figure 70 (2/3 natural size). 1–2—fishing sinkers from Burial 10–11(57). Barbs from a salmon leister (possibly elements of a complex hook for catching halibut); 3—from Burial 7(58); 4–5—from Burial 6(59); 6—from Burial 1(57); 8—from Burial 7(58); 7—fish hook from Burial 23(59). Boat hooks: 9—from Burial 2–3(59); 10—from Burial 22(58); 13—from Burial 23(59). Hooks: 11—from Burial 19(57); 12—from back dirt of 1955 trench.

Chapter 7

Objects of Daily Life and Domestic Use, and Auxiliary Hunting Equipment

Objects used daily or domestically include several items whose assignment was closely connected with the primary orientation of the early Eskimos' economy—sea-mammal hunting.

Both sea-mammal hunting tools, most especially the harpoon complex (harpoon heads, foreshafts, shaft heads, and so on), and objects used daily were perfected over millennia. During this long period, tools were created to be most effective in conditions of the extreme north. This also explains the why individual tools that emerged at the beginning of Old Bering Sea period have the same form and assignment now that they did then. The forms of tools for hunting and production tools was preserved throughout more than two millennia. This is true of bows, arrow shafts, bolas, adzes, and other objects—not to mention the harpoon complex. The tendency toward a permanent form for the woman's knife (the *ulyak* or *ulu*) is especially obvious. The ulu, known to us from early Old Bering Sea times, spread throughout the whole territory of Eskimo settlement from Chukotka to Greenland and preserved its form to the present day, the only difference being that the stone blade was replaced by a metal one.

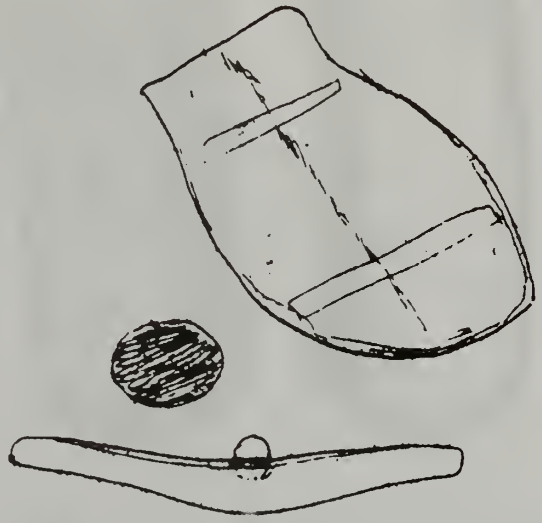

Figure 71. Modern tools for working hides (illustration by the Eskimo Unuk).

The ulu was the universal tool for women's work. The women skinned and butchered game with this knife. They used the ulu to separate the fat from the skin and cut up the meat. Then they cut up the skin for to make footwear and clothing with it. Women split the skin of the walrus into layers, making the baidar cover. The ulu's usefulness is explained, as we have already noted, by its being exceptionally adaptable to different kinds of work—it could handle both dense skin and thick skin that has a thick layer of subcutaneous fat.

This tool is similar in form to the flaked stone knives of the Siberian Paleolithic.

Although the general form of the ulu is uniform, these knives may nevertheless differ in size, detail of configuration, method of attachment of the handle, profile of the cross section, and other features. The handles differ in that they may be made of an exceptionally large variety of material, in a variety of

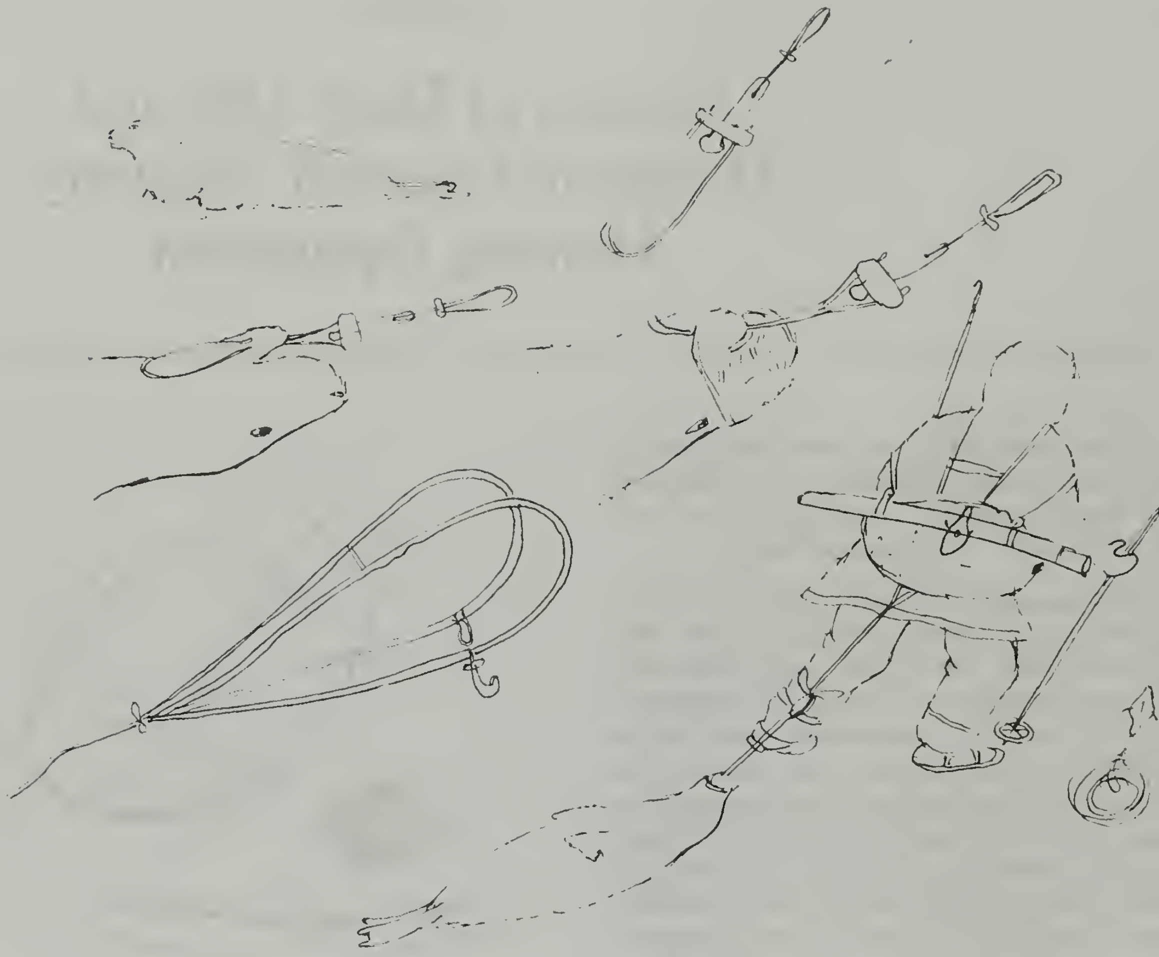

Figure 72. Transporting a killed seal (illustration by the Eskimo Unuk).

forms, and with various finishes. Some ulus have a regular, rounded blade (Fig. 75:1); the side fastened to the handle has a rectilinear cut. However, many ulus are of the shoulder type, and the middle part of the side facing the handle is set off and forms a broad, low, rectangular stem (Fig. 75:2). In some cases, this stem is thick in cross section than the blade, as can be seen in the example in Figure 75:5.

Attachment by a dowel set in a hole drilled by counter boring, so widespread in oblong men's knives, is not characteristic for ulus. Nevertheless, ulus are encountered that are fastened to the handle, convergent at an obtuse angle to the basal part of the blade, in which such a boring was made. Various materials, including wood, antler, and walrus tusk, went into making ulu handles. Wood evidently predominated, but, inasmuch as it usually deteriorated, most ulus we found had no handles.

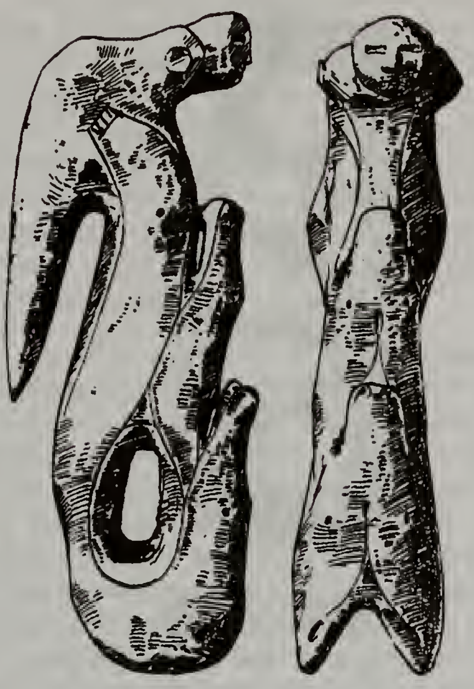

Figure 73. Hook for transporting a whale carcass, from Burial 99–100(63). Ekven cemetery.

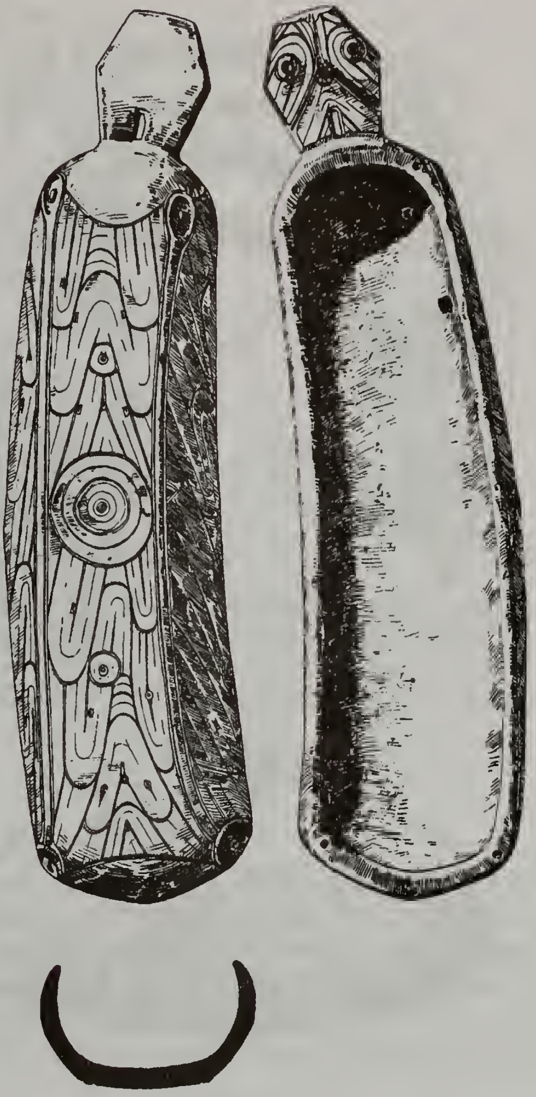

Figure 74. Offering bowl from Burial 7. Ekven cemetery.

Walrus-tusk handles were, however, well preserved; moreover, some of them are works of art (see Figs. 75:6, 8). Evidently, the most common form was the small elliptical handle (Fig. 75:7). One handle, artistically carved from walrus tusk (Fig. 75:3) and having holes for the fingers, is particularly distinctive.

In addition to ulus, special stone scrapers were used to work hides; judging by ethnographic materials, these scrapers were set in a slightly bent wooden handle and were used to remove fat or hair from hides: the skin was placed lengthwise on a special flat wooden board (Fig. 71), which was fastened so that the woman working the skin could hold the ends of the wooden handle with both hands. A stone blade (scraper) was set in the middle of this handle. These scrapers are well represented among materials from the Uelen cemetery and are illustrated below. As a rule, they were made of siliceous stone by careful flaking. The working edge and sometimes the body of the object were carefully ground. It should be noted that the angle at which blades of these scrapers were sharpened depended on their assignment, specifically the kind of operation required for working the skin.

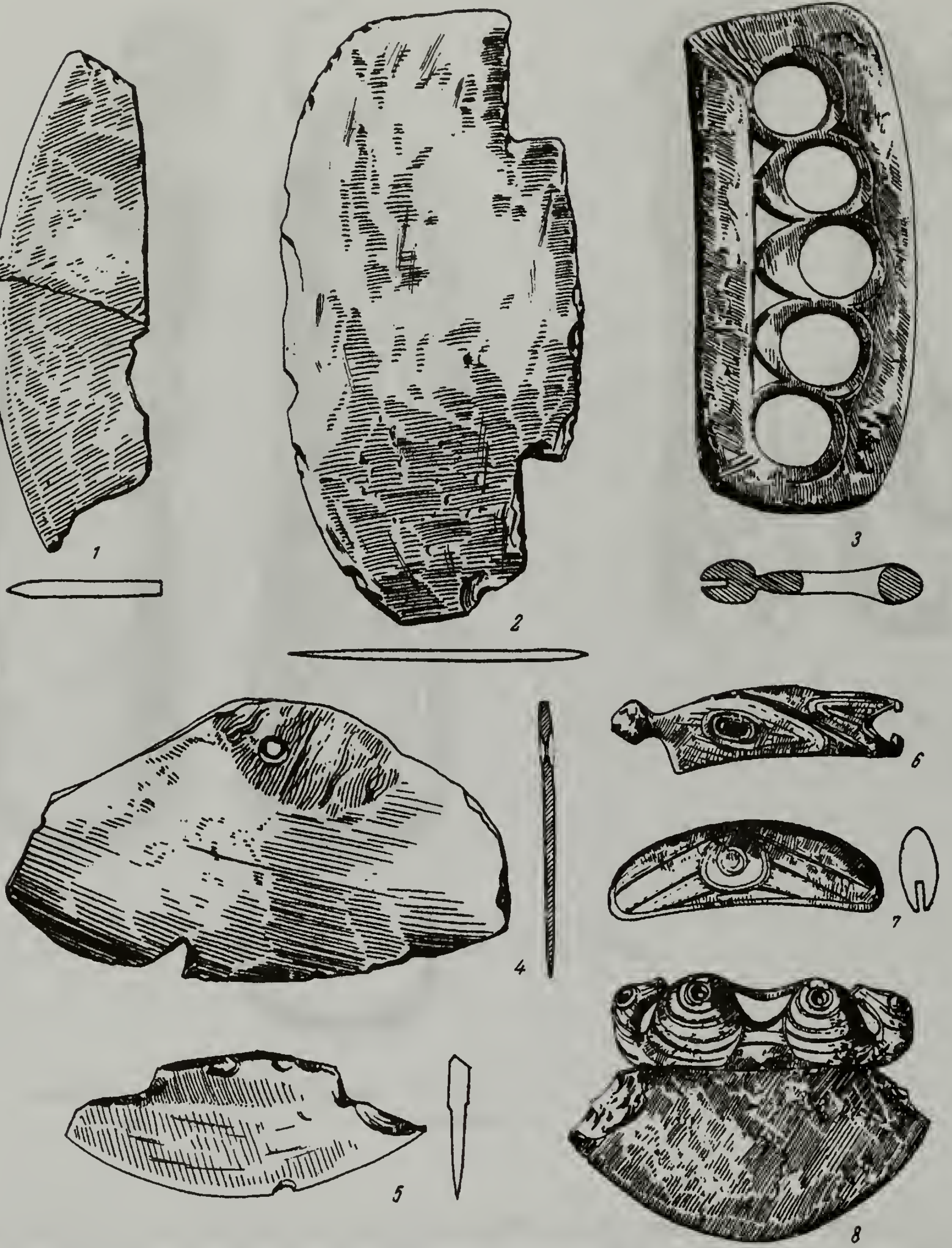

Figure 75 (½ natural size). Blades of women's knives: 1—from Burial 22(58); 2—from Burial 10(58); 3—from Burial 5(59); 4—from Burial 2(57); 5—from Burial 10–11(57). Handles of women's knives: 6—from Burial 9(59); 7—from Burial 2(55); 8—woman's knife (ulu) from Burial 20(59).

For working a hide, and especially for extracting fat from sea-mammal intestines (which were used to make rain gear), special walrus-tusk scraper-scoops were used. These scrapers are just as widely represented in the Uelen cemetery. Elliptical, arc-shaped, and uniformly thin in cross section, they are monotypic both in form and size and were never decorated. The specimens illustrated in Figures 76:4-7 give an idea of their appearance.

For other work with a skin—preparing it for clothing, hunting equipment, boat covers, and other items—various tools were required. For example, for sewing or making holes in a ready-cut skin various piercing tools were used. The most widespread piercing tools were bone punches. Some of them were made from scapular and long bones by simple chipping and grinding the bone to make a working point, the rest of the bone being left unmodified. Such tools are illustrated in Figures 77:7 and 78:11. More carefully prepared punches were carved from walrus tusk. However, some of these tools were also very crudely worked, simple in form, and lacking both sculpted or engraved design.

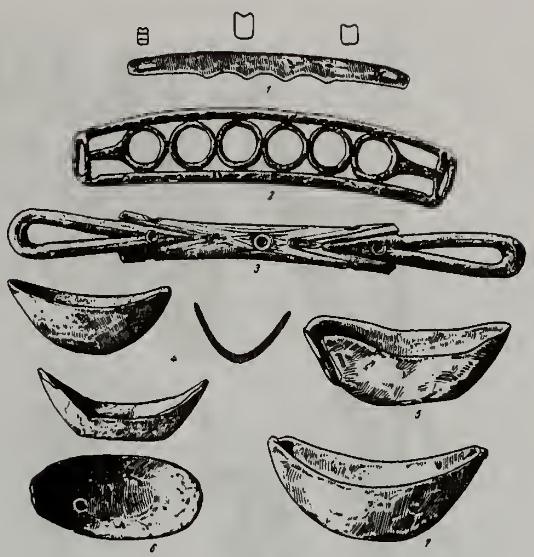

Figure 76 (½ natural size). Vessel handles: 1—from Burial 7(58); 2—from Quad M-6 (1959); 3—from Burial 17(59); trough-scrapers: 4—from Burial 12(58); 5—from Burial 2(57); 6—from Burial 13(58); 7—from Burial 6(57).

The ground stone awls are substantially more complex tools. Figure 77:10 depicts one such stone awl-punch with a bone handle. In this same illustration are two similar objects (Fig. 77:8, 9), the latter of which is broken. It is interesting that there is a drilled hole in the slightly flattened and broad lower part of this object. The purpose of this hole is difficult to judge, though it was probably simply for passing a thong or sinew through to suspend the object. It is also possible that this was a stone needle used for sewing kayak and baidar coverings and for preparing hunting bags and specially sewn walrus-hide bags for carrying meat and oil.

It is also possible that this tool had a handle, and the hole was used to fasten it to the handle with a dowel.

No other stone objects that might be needles were found in the Uelen cemetery, but a large number of bone needles were found. These needles were made from walrus tusk and differ from stone ones by their exceptional fineness of manufacture; there were often miniature and had narrow eyes. Such an eye could likely be drilled only by a very fine metal point. Metal needles, which served both as a model for making the bone needles we found and as a tool for drilling the eye in the bone needles, most probably arrived in Uelen from the south.

The early Uelen people kept their needles in special walrus-tusk cases that are hollow inside and have slots along the sides. Most needle cases were decorated with an ornamental pattern similar to the design on other objects found in the same burials. Specimens of needles and needle cases are illustrated in Figures 77:1 and 77:3.

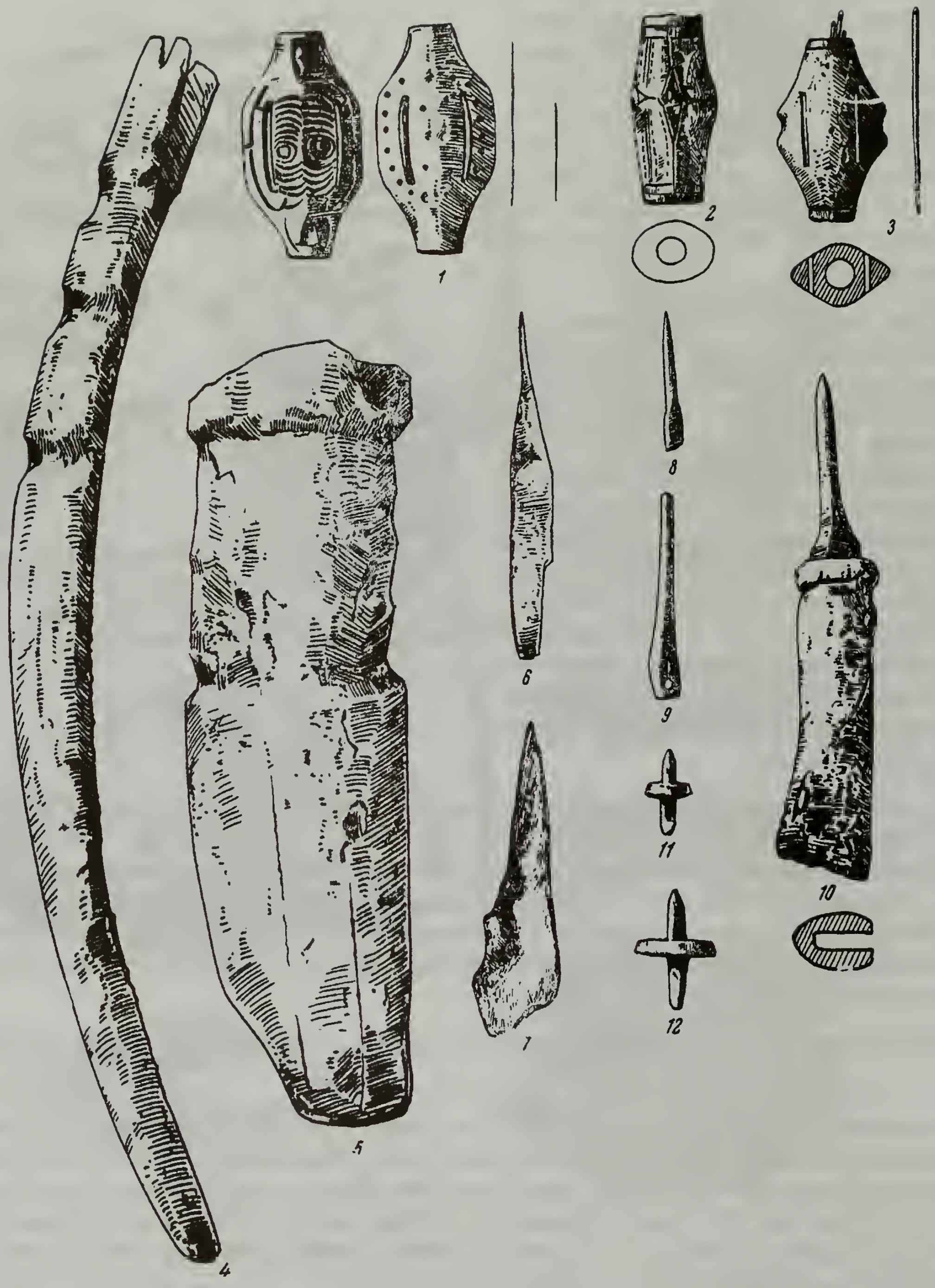

Figure 77 (½ natural size). Needle cases: 1—from Burial 6(57); 2—from Burial 13(57); 3—from Burial 12(58). Bone punches: 6—from Burial 1(57); 7—from Burial 6(59). Slate punches: 8—from Burial 6(58); 9—from Burial 3(59). Slate punch with socket: 10—from Burial 7(59). Mattocks: 4—from Burial 15(57); 5—from Burial 18(57). Items in the form of a top: 11–12—from Burial 5(58).

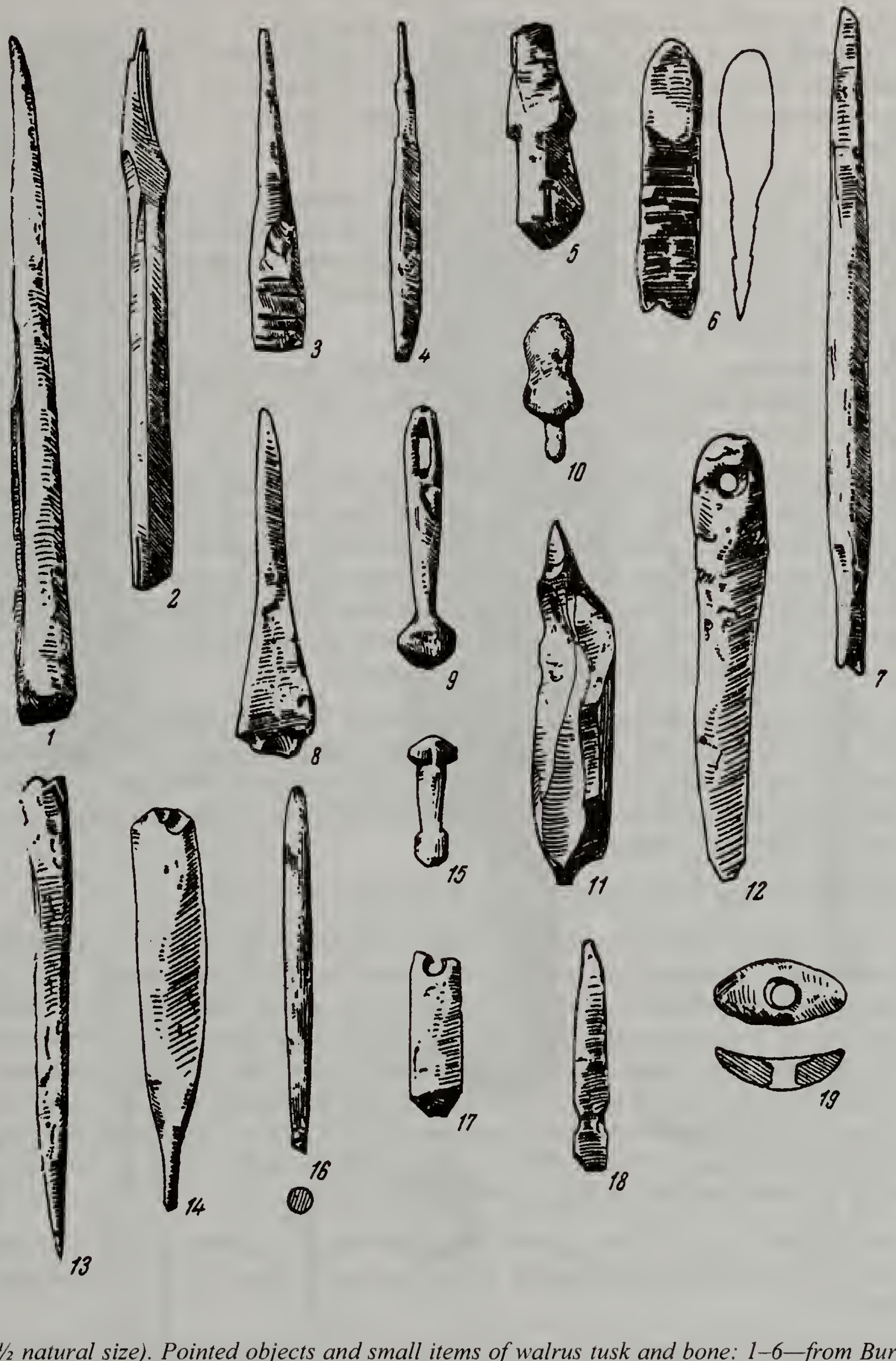

Figure 78 (½ natural size). Pointed objects and small items of walrus tusk and bone: 1–6—from Burial 22(58); 7–9—from Burial 23(58); 10—from Burial 6(59); 11—from Burial 12(58); 12–13—from Burial 3(57); 14–15—from Burial 4(57); 16—from Burial 6(57); 17–18—from Burial 15(57); 19—from Burial 19(57).

Only threads twisted from animal sinew could be used with these needles. We do not know how these threads were stored. From ethnographic materials we know that it is not necessary to wind them on a spool. A bone item reminiscent of a spool was found in the Uelen cemetery (Fig. 79:9). But we cannot say with certainty precisely what it was used for. In addition, several burials contained many spindle-like items that were thicker and whose form also that suggests they could have been used as spools or reels for winding up thread.

However, well-known objects very similar to spools, equipped with incisors from the teeth of rodents and used as engraving instruments, were found in the Ipiutak cemetery at Point Hope (Larsen and Rainey 1948:83, Fig. 18; Pl. 8, Figs. 15-22; Pl. 43, Fig. 3). It is possible that the objects illustrated in Figures 79:3 and 79:8 had such an assignment, though their insufficiently complete preservation does not permit us to confirm their purpose.

There is no indication in the archaeological material of the specific kind of clothing the early Uelen people wore, if one leaves out the anthropomorphic figurine illustrated in Figure 99:5, which depicts a woman wearing a turned-down hood.

Many buttons and clasps found in the cemetery probably belonged not to clothing but to hunting equipment. The round buttons (Figs. 80:4, 5, 15), however, were very probably decorations sewn to clothing. The objects illustrated in Figure 80:16, 18-21 were probably also decorations. Clasps (Figs. 80:18-21) were possibly part of a necklace. Meanwhile, the purpose of the objects in Figure 80:8 and 80:22 remains unknown. Of course, the fishing tackle for flounder, which Rainey published (1941:499, Fig. 15:7), bears some structural similarity to object 22. However, neither the dimensions nor the form of the object we have illustrated permits our ascribing to it such an assignment.

Concerning buckles and clasps, is easily obvious from the ethnographic materials. The buckles (Fig. 80:2, 6, 7, 13, 17, 23) probably came from thongs that girded the parka. The hunter wore knife and hunting amulets on such a thongs. Clasps (Fig. 80:1, 3, 9–11) were most often used for sealskin hunting bags (the skin had been removed from the animal like a stocking) and for special shoulder straps used for transporting dead seals across a portage over the ice.

Snap-swivels were also used with such straps (Figs. 80:14; 96:1, 4, 8).

In many cases, the snap-swivels bore the likeness of diverse animals. According to informants, each clan had a patron-helper—a polar bear, ermine, seal, or one of several other sea or land animals. The helper could even be a bumblebee skillfully carved from walrus tusk. Two loops were fastened to the snap-swivel, the largest loop passing through a slit made in the lower jaw of a dead seal or bearded seal (Fig. 72). The loop was then tightened around the animal's upper jaw. The seal or bearded seal was turned onto its back, the short thong loop of the snap-swivel was fastened to a long thong running from the shoulder strap, and the bagged animal was transported to the village. Specimens of snap-swivels resembling animals are illustrated in Figure 96:1, 4–6, 8. Sometimes snap-swivels without decorative design were also used to transport a killed animal prey (see Fig. 80:14).

As is evident from Figure 72, ethnographic materials record composite snap-swivels used to transport prey. These objects are also represented in the archaeological materials. Figure 78:9 depicts part of such a snap-swivel.

It should be noted that special snap-swivels were used for towing killed whales. These helpers depicted on these snap-swivels had to reconcile the hunters with their kill.

It is interesting to note that snap-swivels used to transport whales, besides bearing zoomorphic images, also bore anthropomorphic ones. Such an object was found in Burial 14–15(58) (Fig. 100), and another in Burial 99–100 (Fig. 63) in the Ekven cemetery (Fig. 73).

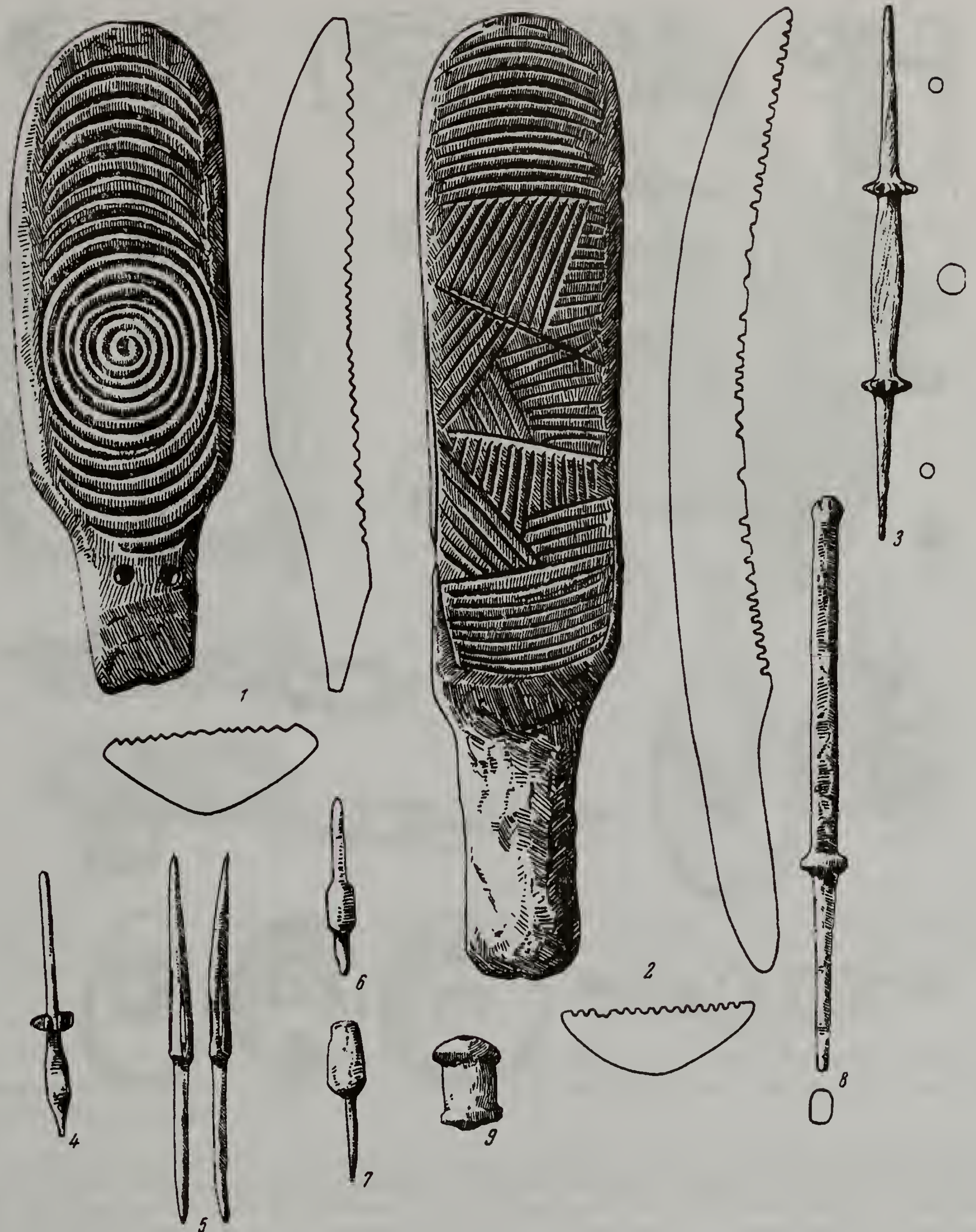

Figure 79 (½ natural size). Ceramics stamps: 1—from Burial 6(57); 2—from Burial 15(57). Spindle-shaped objects: 3—from Burial 12(58); 4—from Burial 7(57); 5—from Burial 17(59); 6—from Burial 15(57); 7—from Burial 7(57); 8—from Burial 3(57); 9—spool from 1955 trench.

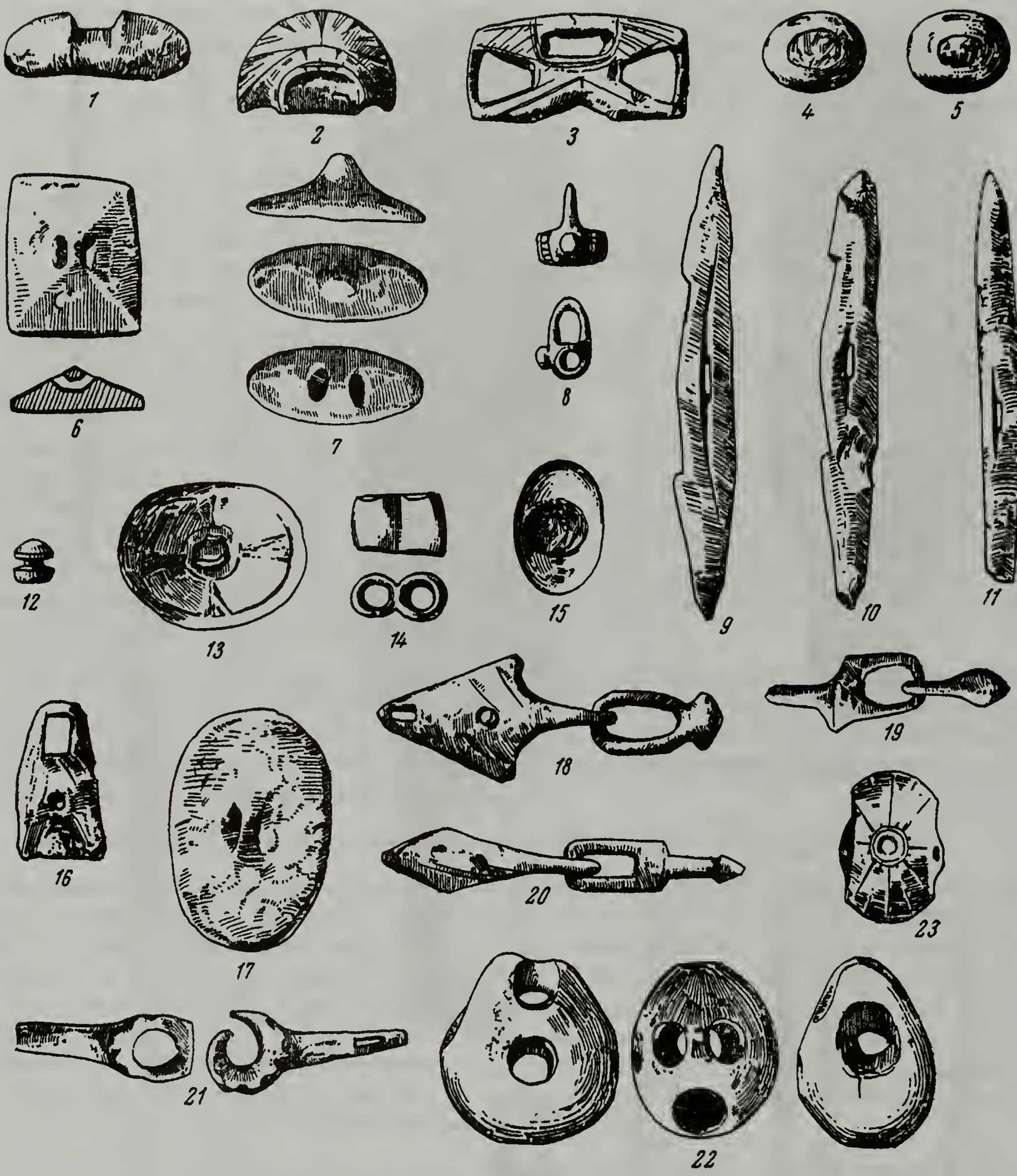

Figure 80 (½ natural size). Buttons: 1—from Burial 5(59); 2—from Burial1(59); 4–5—from Burial 16(59); 6—from Burial 6(57); 7—from Burial 18(57); 13—from Burial 5(59); 15—from Burial 20(59); 17—from Burial 5(57); 23—from Burial 20(59). Fasteners: 3—from Burial 17(59); 9–11—from Burial 22(58); 12—from Burial 19(57); 14—from Quad X-16 (1959). Pendants: 8—from Burial 4(59); 18–19—from Burial 16(59); 20–21—from Burial 13(59); 16—from Burial 19(58); 22—pendant in the form of a sphere, from Burial 2–3(59).

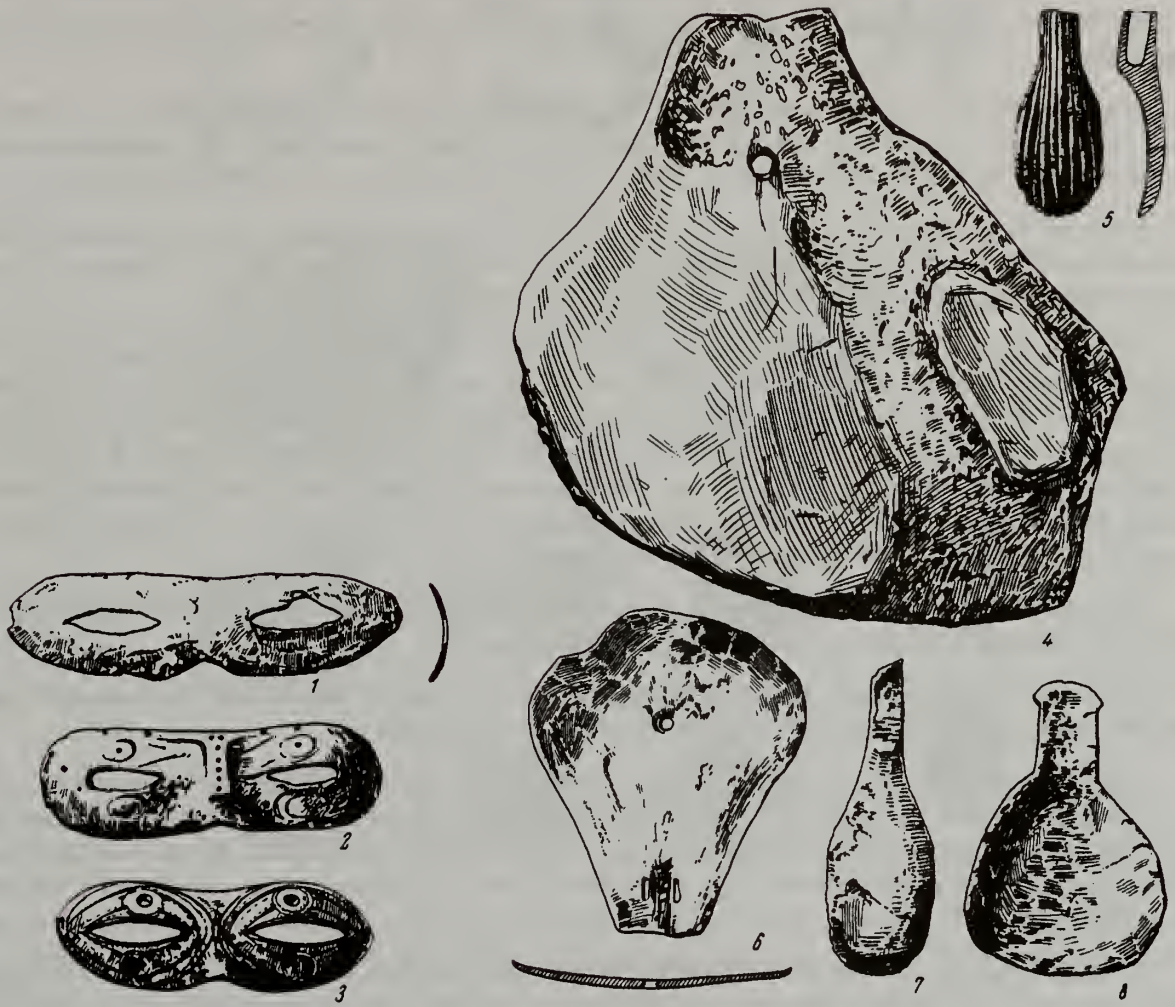

Figure 81 (2/5 natural size). Snow goggles: 1—from Burial 7(58); 2—from Burial 17(57); 3—from Burial 10(57); 4—snow shovel of walrus scapula, from Burial 13–14(57); 5—grooved paddle, from Burial 14–15(58); 6—small shovel from Burial 16(57). Spoons: 7—from Burial 7(58); 8—from Burial 7(58).

Snow goggles should also be included in the auxiliary hunting equipment. In spring, sea-mammal hunters, when going out onto the ice to hunt and when returning from the hunt, used these to protect their eyes from the sun's blinding rays.

Protective goggles were represented in the Uelen cemetery by three walrus-tusk specimens. Most likely, there were also goggles made from other, less stable materials (leather, wood), but they have not been found to date.

All the goggles from the Uelen cemetery have comparatively wide, almond-shaped slits (see Fig. 81:1-3).

Several finds at Uelen and in the nearby culture in the Ekven cemetery permit one to draw conclusions about the kinds of implements the early Eskimos used.

The wooden vessels and baleen vessels found in the Uelen cemetery were not preserved. However, specimens were found in the Ekven cemetery because soil conditions there contributed to their preservation.

Likewise, the hide vessels were found in bad condition, although many leather handles and wooden vessels, well known to us through ethnographic analogies, were found largely intact. The handles are varied in form, often having notches or holes for the fingers. This kind of handle is illustrated in Figure 76:1-3.

Many of these objects are genuine works of art both in their form and in their decoration, which featured the finest ornate curvilinear design. The object illustrated in Figure 76:3 is a specimen of just such a carefully engraved and beautifully decorated walrus-tusk vessel handle.

Several objects described in this section, being objects used in daily life, in the household, or as auxiliary hunting equipment, are very similar in form to objects of cult assignment. Above, we described walrus-tusk scraper-cups used for cleaning intestines and skins. These tools resemble the walrus-tusk vessels found in the cemeteries (see Fig. 95:1-4). They also have an elongated elliptical form but are equipped on one side with a handle. Unlike the usual scraper-cup, these vessels are covered with decoration, are more flattened in cross section, and have thicker walls. On the inner walls of one such vessel one can easily see traces of the ocher that once filled the vessel.

The cups found at Uelen, both scrapers and ceremonial cups, are small, but in the Ekven cemetery's Burial 7, a substantially larger ceremonial cup was found (Fig. 74).

If we draw on ethnographic materials, we can confidently classify these vessels as ceremonial cups. The ocher stain on one of the vessel's walls corroborates its ceremonial use.

The Eskimos used such ceremonial vessels as recently as 40 to 50 years ago for offering a sacrifice to a animal. Thus, when an arctic fox or polar bear was killed and brought to the house, a ceremonial cup filled with food was placed before it. The "feeding" allegedly reconciled the killed animal with the hunter and demonstrated a good attitude toward the prey. This ceremony was supposed to contribute to later success in hunting as well.

A similar custom took the form of "reconciliation" with sea mammals that were killed. The hunter always "gave a drink" of fresh water to the killed seal or sea lion using a ceremonial cup or *protkuk* (a baleen vessel with a wooden bottom). Usually, a young boy brought the water vessel and passed it to the hunter who had killed the seal. The fresh water was then poured over the nose and into the mouth of the dead animal.

The remains of ceramic vessels were found in many burials. Most of these vessels were thick-walled, grayish-black, and of crumbly paste with a large amount of temper. The quality of the firing was not high. In the conditions at the Uelen cemetery, characterized by periodic freezing and thawing, low-quality ceramics were poorly preserved and in many cases were transformed into a scattered earthen mass. However, some better-preserved fragments were successfully recorded and give an idea of the vessels' appearance. All are bowl-shaped and round-bottomed—the profile of the rim and the curvature of the walls are given in Figure 82:1–5. Often, the bowl's cavity contains oily organic remains that is different from the general fill of the grave and suggests that meat was ceremonially placed in the cups in the grave.

It is remarkable that in the burial inventory there was not one specimen of an oil lamp, though the burial inventory of later Eskimo cemeteries (seventeenth to nineteenth centuries) usually includes these objects.

The surface of the early ceramics is often covered with a shallow stamped design—impressions of rope, wavy lines, and concentric circles applied one on the other (Figs. 82:6, 7).

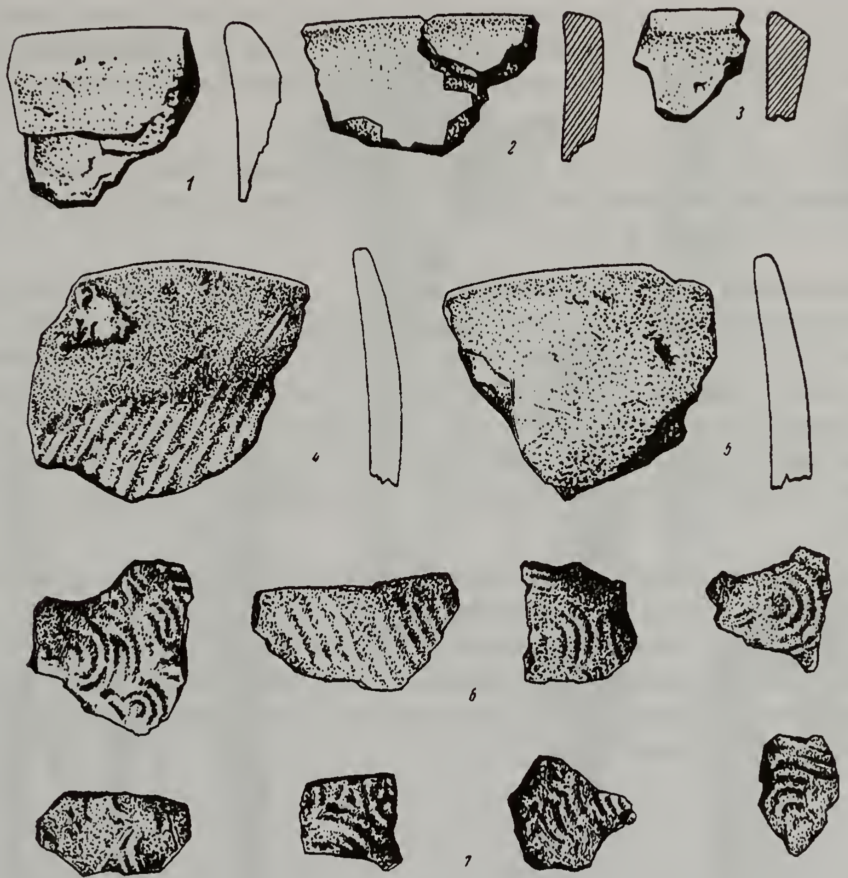

Figure 82. Ceramics: 1–3—rims of vessels from Burial 8(57); 4–5—rims of vessels from Burial 10(59); 6—fragments of a vessel with decoration, from Burial 10(59); 7—fragments of a vessel with decoration, from Burial 12(59).

Stamps used to apply the design were also found in the Uelen cemetery (Figs. 79:1, 2). One stamp has a pattern of concentric circles on it; the other has intersecting cuts. These objects have been in several works. In Ford's (1959:204, Fig. 99) work, an object with a concentric design on it was published identified as a ceramics paddle, whereas in Rudenko's work (1972:Pl. 9:7), an object with parallel cuts was identified as a "paddle, ivory."

The initial assignment of such objects to pottery modeling seemed reasonable, but it is interesting to note that, during the course of excavation, Eskimo informants identified the objects in this category as graters for pulverizing leaf tobacco. With the development of trade and the appearance of imported metal containers, which displaced the local ceramics, these tools were obviously not needed for their earlier purposes. But, this very trade development acquainted the Eskimos with leaf tobacco, which they crushed with a knife or rubbed on a grater. Tools of the type we are examining also began to be used in this new stage for this latter purpose.

Among the objects described above is one that is somewhat similar in form, being made in the shape of a paddle but substantially smaller. It is represented in Figure 81:5. It also has a relief surface, on the convex rather than the concave side. In form, this object might be called a small spoon, but its assignment remains unclear.

In the Uelen cemetery, there were also some objects that, for good reason, could be classified as spoons. These objects were made of walrus tusk (see Fig. 81:7, 8). A spoon-skimmer made from a seal spatula is pictured in Figure 81:6. Its wooden handle was not preserved. Such spoons were used to skim the fat from meat in cooking pots.

Snow shovels were made from the scapulas of larger animals, chiefly walruses, and were used to throw back snow from the entrance of the house, to clear out holes for meat pits, and for similar work. A typical specimen is illustrated in Figure 81:4.

Walrus-tusk mattocks were used for doing earthwork—digging up edible roots and chopping ice in winter. The wooden handles of these mattocks were not preserved. As a rule, mattocks were made from a whole walrus tusk. The working edge usually bore traces of wear, and, sometimes, sizeable flakes were knocked off the tusk. A handle was fastened to the upper part of the mattock, and there were special notches on it for attaching and fastening the handle. The dimensions of mattocks and their cross sections differ. Some were made from the thinner tusks of the female walrus (see Fig. 77:4) and evidently had a special assignment. Others, intended for coarser work, were made from the massive tusks of an old male walrus (Fig. 77:5).

Mattocks were encountered in burials rather often, and were frequently found where the basic burial inventory was very poor. Their position in the grave often distinguishes them from the rest of the inventory because they lie not with it but separate from it. Undoubtedly, mattocks were also used for digging burial pits. It is indeed possible that unlike the rest of the inventory, which was deposited in the grave on the assumption that the deceased would need it in the other world, the mattock was simply left in the grave after the burial pit was dug.

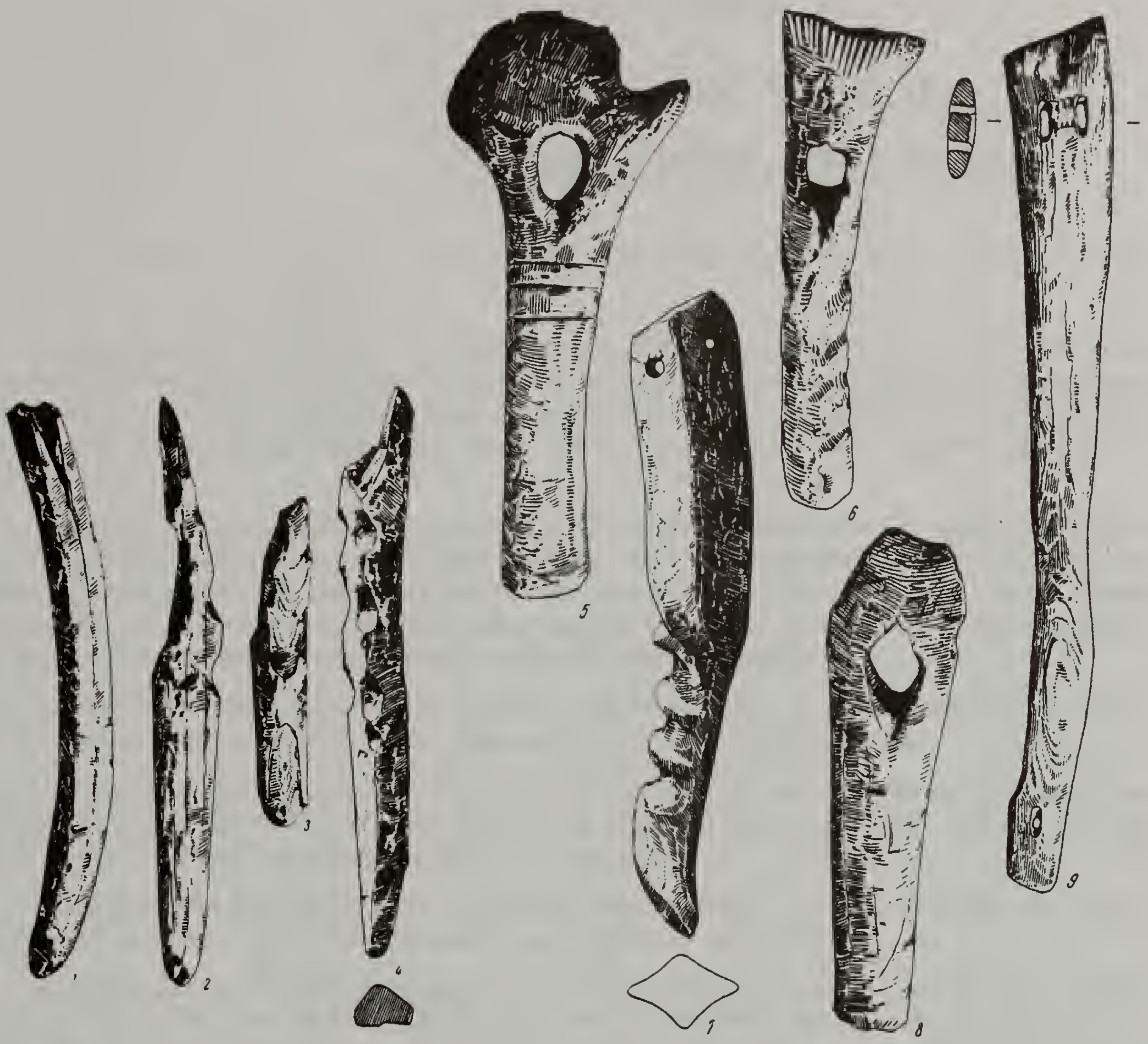

Figure 83. Mattocks: 1—from Burial 23(58); 2—from Burial 15(57); 3—from Quad C-1 (1958); 4—from Burial 6(57). Adze handles of antler: 5—from Burial 20(58); 6—from Burial 17(57); 7—from Burial 22(58); 8—adze handle of walrus tusk, from Burial 3(57); 9—adze handle of wood, from Burial 4(60).

Chapter 8

Tools For Working Wood, Bone, and Stone

The Uelen cemetery is the site of a highly developed Neolithic culture. However, still older traditions were preserved in it. As we noted in Chapter 4, such traditions especially include the technique of working lateral stone insets for harpoon heads and equipping 2A2y2 heads with these insets. Figure 85:9 depicts a knife handle in which a retouched blade and inset were also set. Two such insets are shown in Figure 85:10, 11.

This technique undoubtedly dates back to very early traditions. The method of attaching an adze to an antler or bone handle also was used in deep antiquity. In the materials from the early Uelen Eskimo burials, it is easy to trace other examples that indicate a connection between this site and earlier epochs. Nevertheless, we must emphasize that the Uelen cemetery is Neolithic. It is also especially important to note that the Eskimos already knew about iron by the Old Bering Sea period.

The question of when and how iron began to be used by the Eskimos, which preceded the Russians' arrival in the northeastern extremity of the Asian mainland, is exceptionally important.

Until recently, there were no materials that would enable one to date the Eskimos' first use of iron precisely. Therefore, the 1959 Uelen cemetery find—an engraving instrument with an iron working edge, which dates to the classic Old Bering Sea period—is very significant.

It turned out that the Old Bering Sea people used iron, in addition to stone, clay, and organic materials (walrus tusk, bone, antler, wood, baleen), to make their tools and implements.

A quarter century later, archaeologists still held that iron had not penetrated into the Arctic regions, to civilizations very far from the sea, until quite recently. In the 1930s, during excavations on St. Lawrence Island at sites with a Punuk-stage inventory, Collins found engraving instruments equipped with iron burins and a knife handle with traces of an iron blade. "[I]ron," wrote Collins (1937:305), "in small quantities might possibly have reached the Bering Strait and St. Lawrence Island more than a thousand years ago." Later, evidence accumulated that attested to iron's having appeared there even earlier. As early as 1941, Rainey, describing materials from the Okvik site, expressed the opinion that by the Okvik stage of culture the early Eskimos knew of the use of iron. Although no iron objects were found in the Okvik site, Rainey drew his conclusions from the construction of a knife handle, the form of whose slot attests to the use of a very thin blade, which could only have been iron (Rainey 1941:155). Rudenko also asserted that metal had been used in the Bering Sea region in early times Rudenko:

> No evidence of metal has been found yet at either of these two oldest stages of Bering Sea culture, though we find it difficult to conceive how the slots for the socket lashings on the harpoon heads of that time could have been made without a metal tool (Rudenko 1972:177).

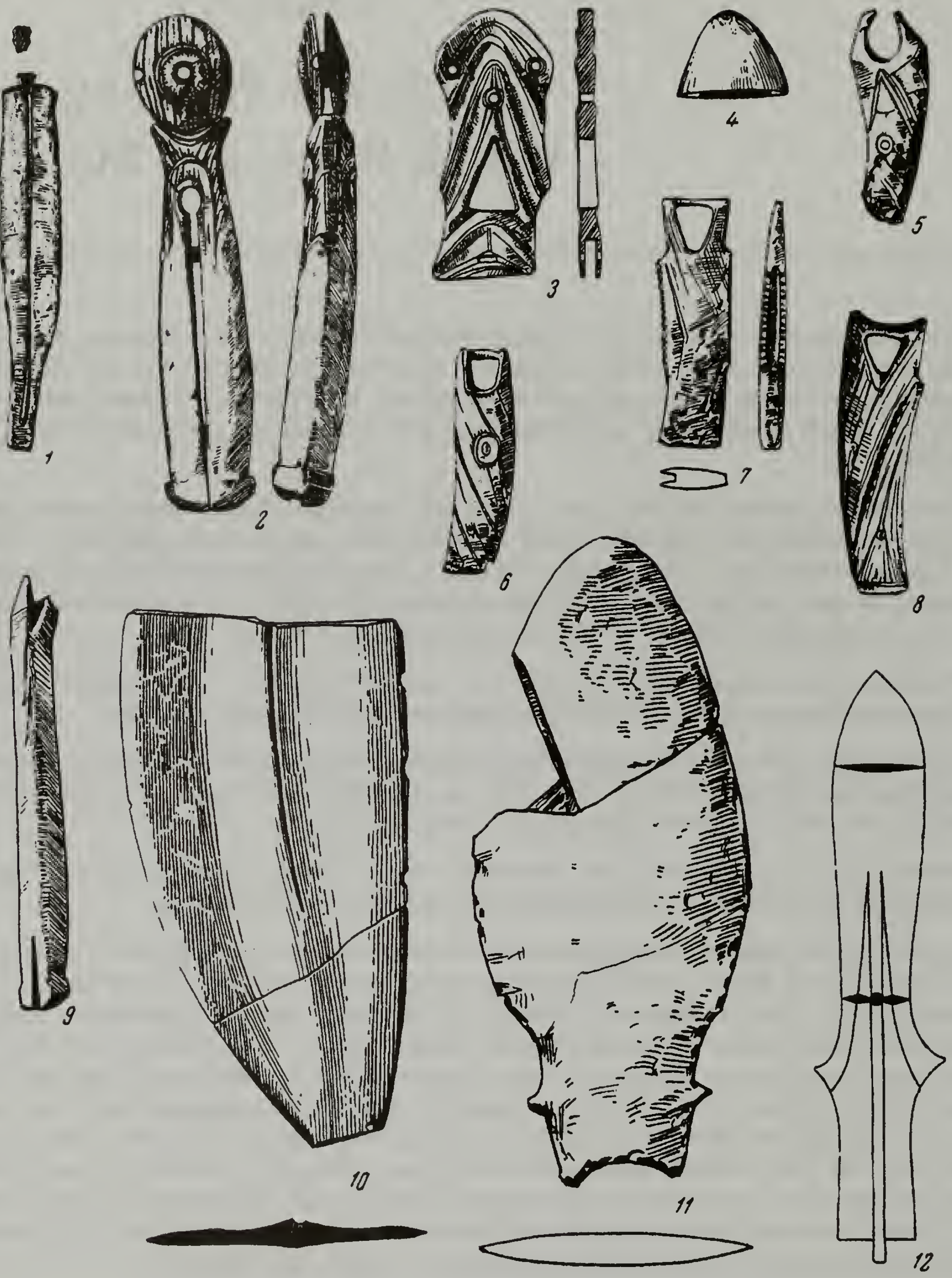

Figure 84. 1—engraving instrument with iron working edge, from Burial 6(59). Burin handles: 2—from Burial 6(59); 3—from Burial 19(57); 4—from Burial 5(58); 5—from Burial 19(59); 6—from Burial 7(58); 7—from Burial 23(59); 8—from Burial 19(57); 9—from Burial 22(58). Stone tools imitating metal originals: 10—from Burial 4(60); 11—from Burial 3(57); 12—metal halberd characteristic for Korea and Japan in the last centuries B.C. and the first centuries A.D. (illustrations given for comparison).

H. Larsen and F. Rainey made a significant discovery in the Ipiutak cemetery, which they had found at Point Hope: an engraving instrument with the remains of an iron blade. Microchemical and spectral analysis showed that the iron was not of meteoric origin (Larsen and Rainey 1948:155). This find was convincing corroboration of the view that iron had penetrated the extreme north long ago, and, as Larsen and Rainey wrote, "indirect evidence of iron in the Old Bering Sea cultural stage" (Larsen and Rainey 1948:254; Levin and Sergeev 1960:116-117).

Studying some early Eskimo techniques for preparing bone articles, S. A. Semenov concluded:

> [T]he investigation of their bone artifacts shows that metal was known to them by the time of existence of the earliest cultures. . . . Artifacts of walrus tusk, including harpoons and other objects of early Eskimo hunting equipment, attract attention by their fine technique of work . . . The study of individual items and the details of the work on these items indicates not only a high level of workmanship, but also the extreme specialization of some methods.
>
> All the incisions, including the smallest, were engraved with a burin whose sharp cutting edge was geometrically regular. Stone burins (flint and obsidian) cannot have a regular cutting edge since they are worked by removing a burin spall, which gives the edge a conchoidal form. Stone burins are generally not favorable for producing deep, narrow, and simultaneously short cuts (Semenov 1957:195–196).

He added: "The features of the traces of work by metal and stone tools leave no doubt that the early Eskimos knew metal, along with stone, and employed it to work bone" (Semenov 1957:199).

Now we have direct evidence for this. In 1959, at the excavation of Burial 6, an engraving instrument was found that was equipped with a metal working edge (Fig. 84:1). The grave in which this instrument was discovered differed from the others in the richness and diversity of its inventory. Here were numerous bone points from arrows and leisters, mattocks, stone points for arrows and darts, women's slate knives (two with round holes bored through them), and other objects. The most interesting are the toggling harpoon heads (Fig. 34:100–108), harpoon shaft heads (Figs. 42:7; 43:5), and a "winged object" (Fig. 49:7). All the objects are characteristic of sites of the Old Bering Sea culture and are decorated with curvilinear designs. An engraving instrument with an iron burin that was found in this Old Bering Sea burial is evidence that iron had penetrated here no later than the middle of the first millennium A.D.

The issue of the ethnogenesis of the Eskimos and other peoples of the Arctic region and their cultural connections with the populations of more southern territories is complex, and one of the essential questions is when and by what route iron arrived among the early tribes of the Arctic.

Also, from where and by what routes could iron have made it into the Bering Sea region during that period? As A. P. Okladnikov correctly points out, there are two possibilities: the early residents of the Bering Sea coast obtained iron from the tribes of the lower Lena in the southwest, or they got it from the Amur in the southeast (*Narody Sibiri*, 1956:101). In both of these regions (in Yakutia as far as Bulon and Chokurovka on the lower reaches of the Lena) (Okladnikov 1955:199), iron was already widely used by the middle of the first millennium A.D. As for the second route—from the Amur—a find made in 1931 during excavations on Ol'skii Island (in the Sea of Okhotsk opposite Nogaeva Bay) is of substantial interest[21]. Here, in a shell layer in the "Upper Site," an engraving instrument equipped with an iron burin was found together with stone tools (Materialy . . . , n.d.). The Ol'skii Island site is undoubtedly very old: there no remains of ceramics were found, and the stone tools are Neolithic in appearance. Okladnikov's recent finds during excavations on the Peschanii Peninsula near Vladivostok are very interesting. There, cast-iron celts were discovered together with stone tools. Chronologically, these finds date to the ninth or tenth centuries B.C.

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[21] Regarding the archaeological materials acquired on Ol'skii Island by V. I. Levin and M. G. Levin, see Levin (1958b:225, no. 26).

Okladnikov points out:

> Metal was already rather well known to the tribes of Primor'e, who left behind settlements with shell middens. This is confirmed by their stone artifacts. . . . Working their points, knives, and daggers from slate, the local craftsmen clearly tried in several cases to reproduce in stone the form of items made of . . . metal (Okladnikov 1959:111).

The slate knife found in 1960 in Old Bering Sea Burial 4 is a clear example of reproducing a metal tool in stone (Fig. 84:10).

Unlike the stone knives found earlier in the Uelen cemetery, its cross section has a complex configuration. The knife, thicker along both edges, is thinner toward the middle, but along its midline is a thickened ridge; along most of its length, it is even more complicated by the kerf along it. Having such a cross section for the working edge is senseless or even dangerous, in terms of a stone tool's durability. However, in this case it is simply a stone imitation of a metal tool, most probably a cast bronze sword. We earlier suggested that metal (in this case, iron) reached the Old Bering Sea region possibly being brought there the Amur (Levin and Sergeev 1960:122). Parallels to the stone knife described above can be found in about the same region among the copper and bronze swords and daggers that had spread throughout Korea and Japan in the last years of the first millennium B.C. and in the first centuries A.D.

It is interesting to note that copper is called *kanuya* in Eskimo, whereas metal in general and copper in particular are designated *kane* in Japanese (Arutiunov and Sergeev 1964:124).

Another example of copying the form of a metal tool in stone is a stone tool (which was, unfortunately, found broken) that is similar to the metal halberds of Korea and Japan (Fig. 84:11). In the first centuries B.C. and in the first centuries A.D., such halberds were widely represented in the named regions (Fig. 84:12).

The Old Bering Sea people were also familiar with the chain. Figure 94:1 depicts a plate with chain links (Fig. 94:1) carved from a single piece of walrus tusk. Such a chain with link was also found in Old Bering Sea Burial 7 of the Ekven cemetery. Similar chains somewhat larger in cross section were also found in the Ipiutak cemetery (Larsen and Rainey 1948:Pl. 70:1–3).

There can be no doubt that metal chains, which the Eskimos obtained through trade with more southern regions of the Pacific coast, served as prototypes for bone chains.

It is most probable that the trade route ran along the Okhotsk coast and that the Eskimos acquired metal artifacts as early as the first centuries A.D. from parts of Primor'e or from Japan via the Kurile Islands.

The single iron working edge found in the Uelen cemetery, where we excavated 76 burials, confirms that there was very little metal in this region and that iron, both in use and in value, was the "diamond of the north"—not just in the Old Bering Sea stage but later as well. It was mostly used for equipping drills and engraving instruments (burins) and sometimes for making the working edges of knives.

Attesting to the value of iron in extreme Northeast Asia, for example, is the fact that in the Koryak language the word "iron" is *pylvyntyn*, which was the same word for "money," that is, the most valuable currency and a trade equivalent.

In the Uelen cemetery, a substantial number of engraving-instrument or burin handles were found; these were most probably equipped with metal working edges. The fact that the blades themselves were not found testifies to the iron's high value. Even on the lower Lena, where iron was not only worked by forging but also smelted on the spot from local iron ores, iron had been highly valued because "in the early Iron Age, when metal was scarce, a smith could reuse it" (Okladnikov 1946:154).

The handles of engraving instruments, as represented by materials from the Uelen cemetery, were made from walrus tusk (Fig. 84:1–9). It can be supposed that an iron working edge was set in some of them. A handle equipped with an iron blade supports this theory (Fig. 84:1).

Based on their form, such handles can be divided into two types. To the first belong handles made of two separate halves with special slots in each for attaching the working edge. The halves were tied tightly together with a soaked thong, which, upon drying, forcefully pulled the working edge tight and firmly locked it in. Figure 84:9 depicts an example of one of the parts of such a handle. Rudenko described the handles of such tools, writing:

> It is a matter of composite handles formed of two halves, made of ivory, and slotted at the end so that a long, thin blade could be inserted. This type of handle is similar to that of a well-known Eskimo implement, still used to cutting bone and ivory—the "antler chisel" of Murdoch and "whittling knife" of Mathiassen. These handles, generally speaking, presuppose the existence of a very narrow blade, which is unlikely to be of stone and is more probably of iron or even steel. It is therefore surprising that such handles appear early on St. Lawrence Island, if not in Old Bering Sea, at least in early Punuk (Rudenko 1972:143).

We found such handles in Old Bering Sea-stage burials, and what is more, the iron was still with them.

Regarding engraving-instrument handles—burins, illustrated in Figures 84:1 and 2—they are fastened in their lower part with a thong or sinew that firmly squeezes the blade, which is fastened in a special slot.

This method of attachment undoubtedly comes from the distant past when a stone working edge was fastened in such handles. The handle, consisting of two halves or having a longitudinal slot, allowed for the quick extraction of the stone blade's tang so that it could be replaced with another tang if it broke. The engraving instrument (Fig. 84:1) has an iron working edge; a longitudinal slot in the handle is not necessary. However, early traditions were so strong that metal working edges were fastened the same way stone ones had been.

The second type of handle is depicted in objects 3–8 in Figure 84. Most probably, iron-working edges were fastened in these handles, but the method of fastening was entirely different. The early craftsmen appreciated the quality of the metal blade and inserted it by fastening the working edge directly into the handle.

Along with walrus-tusk handles, the early Uelen people frequently used deer-antler handles. Various types of stone tools were set in antler handles that had been soaked in hot water. Once the antler dried, the tools were firmly clenched in the socket. Some of these tools remain firmly secured in the antler handle even today (Fig. 85:2–5).

Antler sockets were widely used for holding stone adzes. Figure 85:7 and 8 depict two such antler sockets for adzes-axes. Figure 85:6 depicts an adze-socket blank. Figures 86 and 87 show stone adzes fastened in antler sockets. The dimensions and method of sharpening the working edge varied depending on the adze's intended use.

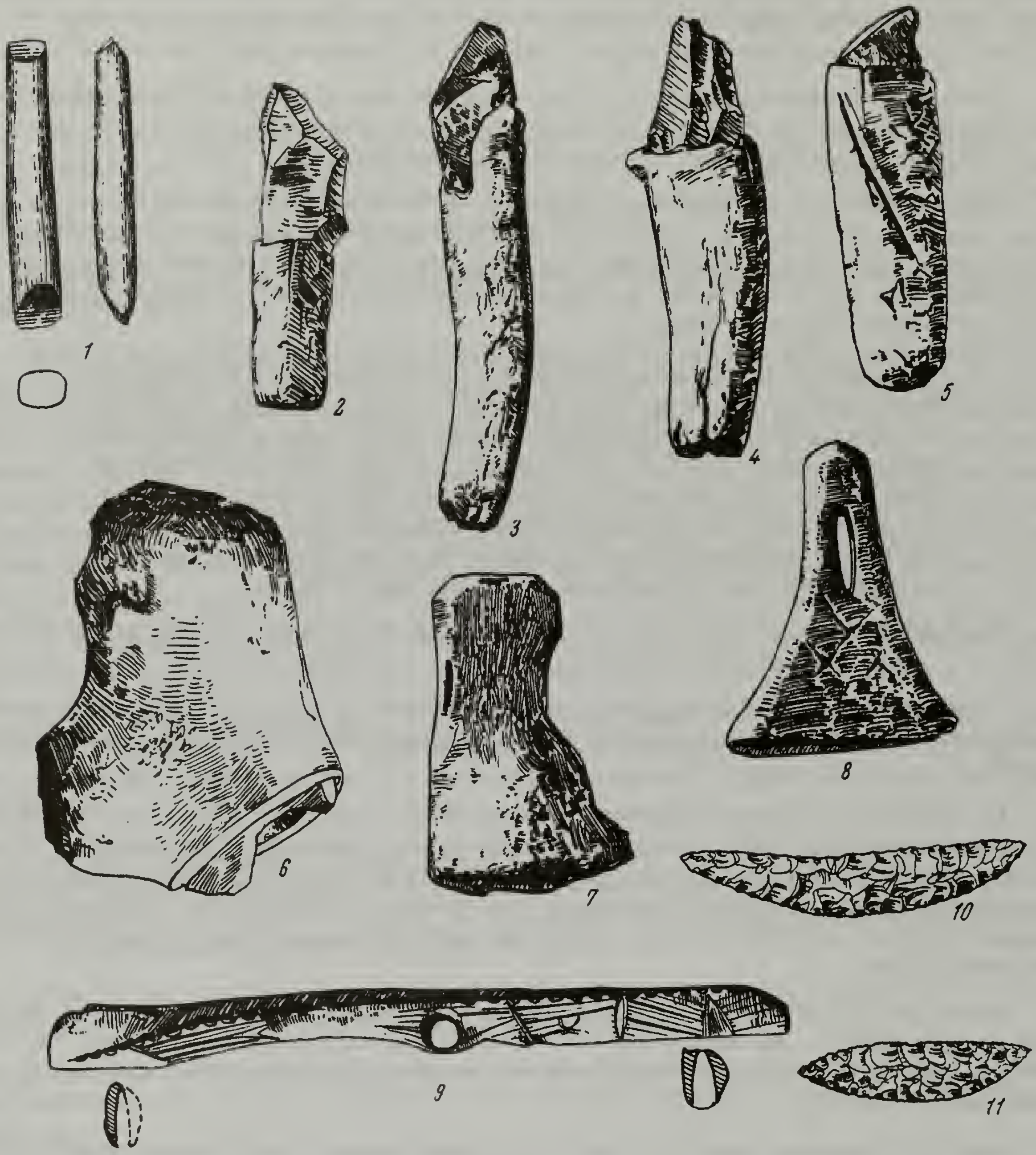

Figure 85. 1—stone chisel-like instrument, from Burial 6(59). Stone burins with antler sockets: 2—from Burial 22(58); 3—from Burial 5(59); 4–5—from Burial 23(59); 6—blank of antler for an adze socket, from Burial 22(58). Antler adze sockets: 7—from Burial 2–3(59); 8—from Quad B-1 (1958); 9—knife handle from Burial 8(59). Knife-like blades with bifacial retouch: 10—from Burial 4(59); 11—from Burial 17(59).

Walrus tusks, from which a blank was made, were initially worked by large crude adzes. The prepared piece of tusk was then further modified by the smaller adzes with working edges sharpened at different angles.

Some adzes were so small (Fig. 86) that it is difficult to distinguish them from the scrapers used for working hides. For example, the tool in Figure 86:8 could have also been used as an adze.

It is interesting to note that several adzes were made primarily by percussion flaking (Fig. 86:1–6), but most of them were made by both percussion flaking and grinding. The tendency toward grinding (if not the whole tool, then its working edge) can be especially clearly seen in Figure 87:1–7. It should be emphasized that the handles used with stone adzes and set in the antler sockets decayed because they were made of wood.

Among the adzes-axes found in the Uelen cemetery, only one specimen was fastened to a handle without the use of an antler socket (Fig. 92). It is of substantial dimensions: 0.25 meters long, about 4 centimeters wide, and more than 4 centimeters thick. Its cross section being rectangular—almost square—makes it a very interesting tool. The other adzes found in the Uelen cemetery have an almost oval cross section. N. N. Dikov found a tool similar to a stone adze (Fig. 92) in the Ust' Belaya Kurgan 11 (Dikov 1964:15, Fig. 7:7). Axes and adzes rectangular in cross section, writes Dikov, are widespread in the Neolithic along the whole Pacific zone of Asia (including Pribaikal'e) (Dikov 1964:14).

The material for making most of the adzes found at Uelen was siliceous slate, which yields well to percussion flaking, the removal of spalls, and grinding. Figure 83 illustrates adze handles that did not require an antler socket. One of them was made of walrus tusk (Fig. 83:7). The antler handle in Figure 83:6 is similar in form and assignment. Two other antler handles (Fig. 83:5, 8), blanks, are not completely finished. The only wooden adze handle found is especially interesting (Fig. 83:9). It is elegantly proportioned and was most probably used with small adzes.

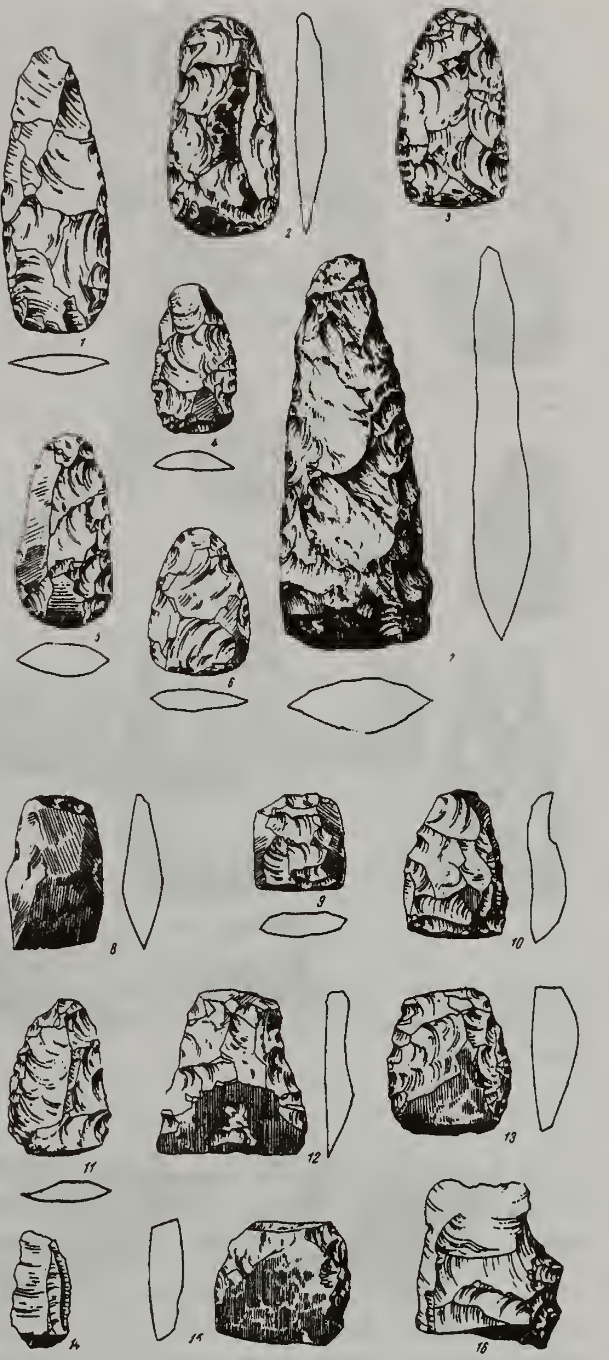

Figure 86. Adzes with flaked working edges: 1—from Burial 84(58); 2—from Burial 7(58); 3—from Burial 12(58). Adzes with flaked and partially ground working edges: 4—from Burial 22(58); 5—from Burial 22(58); 6—from Burial 7(57); 7—from back dirt of trench (55}; Stone tools for working skins: 8—from Burial 18(57); 9—from Burial 22(58); 10—from Burial 19(57); 11—from Burial 22(58); 12—from Burial 7(57); 13—from Burial 2(57); 14–16—from Burial 22(58).

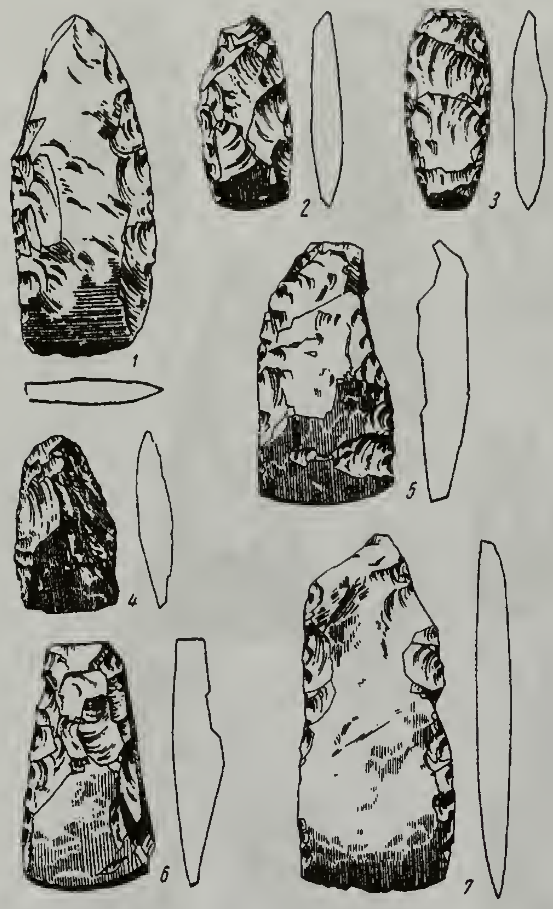

Figure 87. Adzes: 1—from Burial 23(58); 2—from Burial 7(57); 3—from Burial 7(58); 4—from Burial 6(59); 5–7—from Burial 3(57).

A stone chisel-type tool was found in Burial 6(59) and is illustrated in Figure 85:1. It should be emphasized that the Eskimos continue to widely use a variety of adze-like and chisel-like tools. Despite the presence of modern axes of various sizes, adze-axes and adze-chisels are widely used in making baidars, sleds, and several other wooden items. Also, the adze is still used to do the primary work on walrus tusk and to prepare walrus-tusk household objects, in addition to works of art. Based on the methods of adaptation and use, adzes are identical to the analogous forms found in the cemetery, but instead of a stone working edge, an iron or steel one is now inserted.

The stone adzes found in the Uelen burials were used in antiquity for working wood, bone, antler, and walrus tusk.

Percussion flaking, spall removal, pressure retouch, grinding, and drilling were widely employed in the preparation of stone tools. Pressure-flaker handles were found in the burial—some of these handles, made of walrus tusk, were decorated with a zoomorphic design (Fig. 88:1) or have a pattern (Fig. 88:3).

Walrus-tusk drill supports were also preserved (Fig. 88:4, 6), some of which are decorated with zoomorphic designs (Fig. 97:1, 5). Deer astragalus was also used as a drill support (Fig. 88:5). The support in Figure 88:6 merits attention: similar supports were found in archaeological excavations in Alaska (Collins 1937:Pl. 82, Fig. 40; Rainey 1941:509, Figs, 7, 8) and are known ethnographically through the whole area of the Eskimos as far as Greenland. The support was clamped in the drill's teeth by a special projection on its upper part. In this upper part there was a special hole that opened below the place where the support was held with the teeth. This hole served as a drain for saliva.

In the lower part of the support was a depression for inserting the drill's wooden base. The drill was equipped with a stone or metal bit, and with that bit the smallest holes could be made in the center of a circle to apply a design to the surface of a walrus-tusk article, the same way that the very fine holes that were needed for making the slots for the socket girdle were drilled on toggling harpoon heads. With this same drill, minus the bit, one could make fire by using the friction of a wooden drill shaft on a special wooden platform, or plate. The drill was rotated using a special bow with a single coil of bowstring encircling the drill shaft. The drill was also widely used for boring holes in the tangs of large stone knives or slate whaling spears.

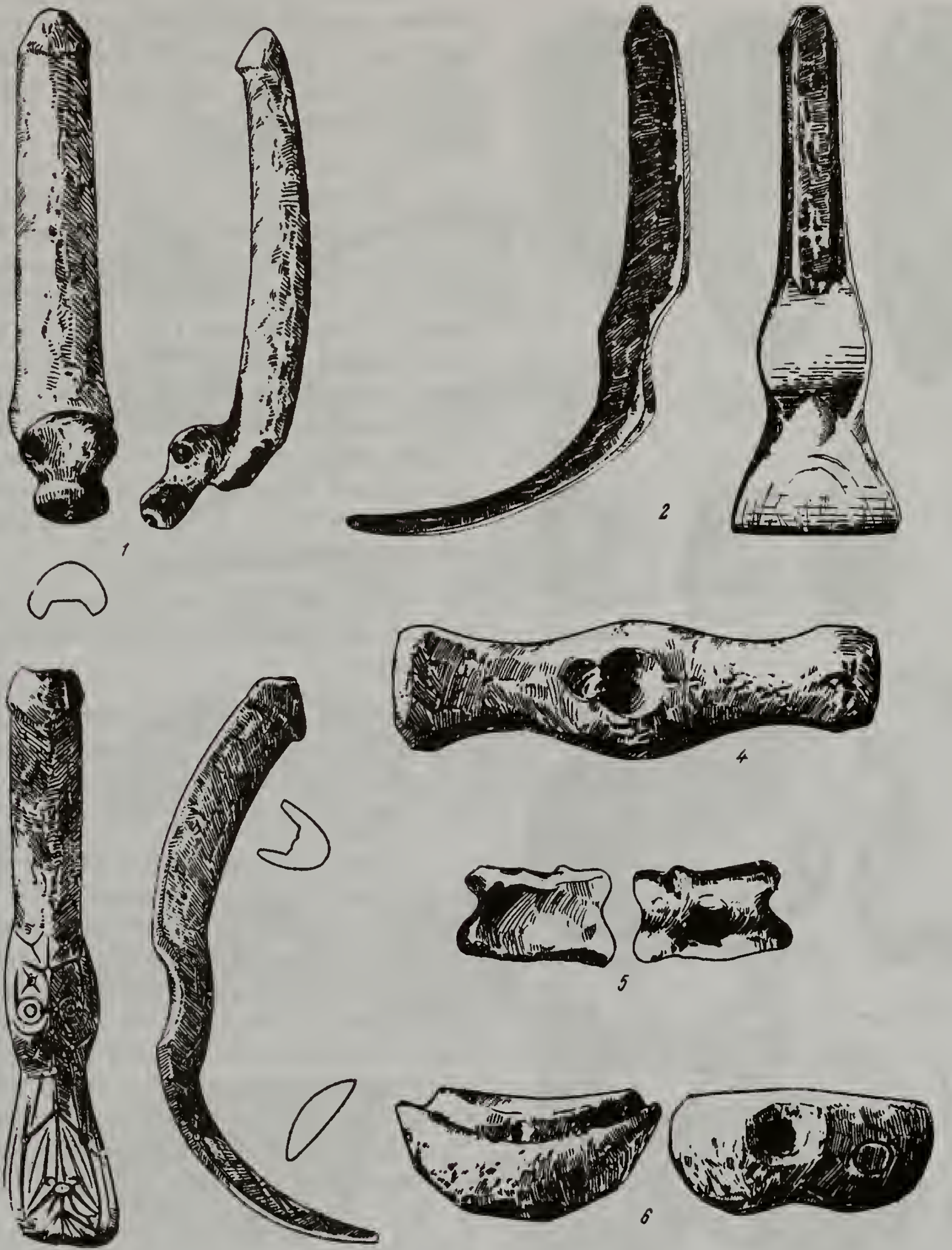

Figure 88. Pressure flaker handles: 1—from Quad B-13 (1958); 2—from Burial 5(59); 3—from Quad B-1 (1958). Drill supports: 4—from Burial 1(58); 5—from Burial 13(59); 6—from Quad C-10 (1959).

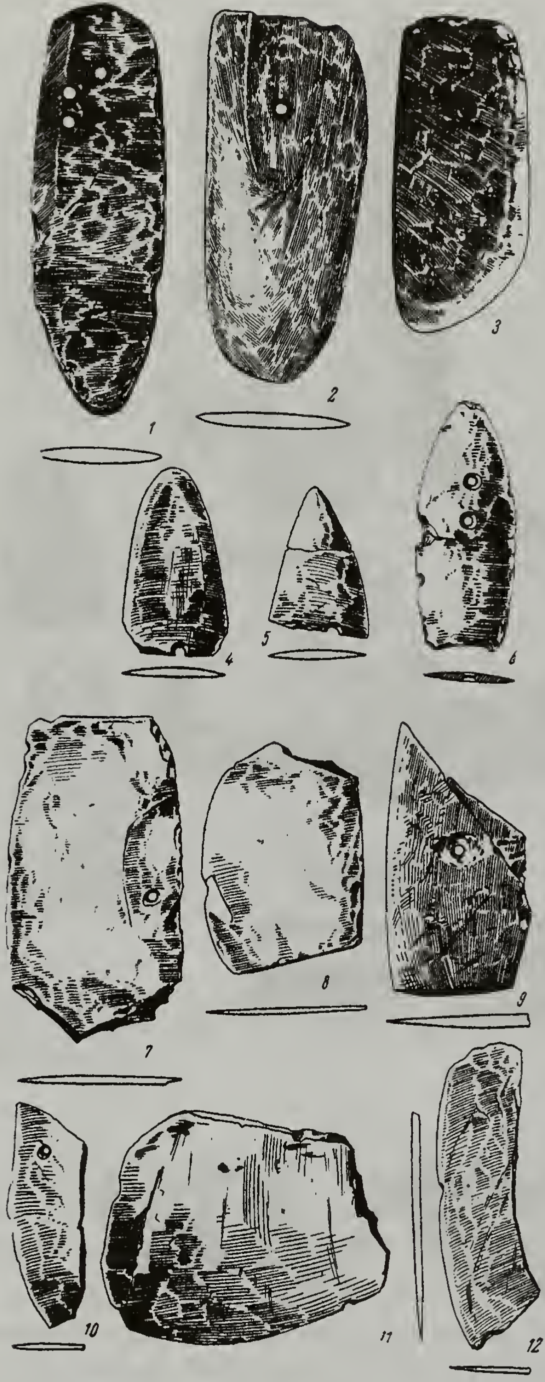

Figure 89. Knives: 1–2—from Burial 6(59); 3—from Burial 5(58); 4–5—from Burial 19(57); 6—from back dirt of 1956 trench. Fragments of slate tools: 7–8—from Burial 6(57); 9—from Burial 9(57); 10–11—from Burial 15(57); 12—from Burial 16(57).

Bifacial drilling was used to make all the holes in slate tools. The high quality of the grinding technique that the early Eskimos used to make stone tools is apparent from the tools and tool fragments illustrated in Figures 89 and 90.

Figure 91 illustrates primarily various scrapers made from flint-like stone. Tools of this type were made by percussion flaking and retouching. These tools were most likely used to work wood, bone, tusk, and antler. Scrapers with a ground working edge were employed to work hides (Fig. 86:9, 10, 12, 13, 15). Most scrapers found in the Uelen cemetery, which were made without grinding (Fig. 91), are of one of two forms. The first type contains tools with straight working edges (Fig. 91:2, 7, 13), while the second type is made up of scrapers with a convex working edge (Fig. 91:9, 15). Sometimes these scrapers are of substantial dimensions (Fig. 91:14).

It is interesting to note that similar scrapers were found in the Kanchalan site on the southeastern Chukchi Peninsula.

Scrapers with a convex working edge and some with two working edges on opposite sides were found at both Uelen and Kanchalan (Dikov 1964:45, Fig. 3:2–5).

Figure 91:3 depicts a tool that served as both a scraper and a burin. The rounded end is the scraper, while the narrow end, which was ground, was most probably used to work hard organic materials. Another tool (Fig. 91:4) was made on a flake; its working edge was trimmed by retouch. It may have been used as a knife. Among the most common stone tools from the Uelen cemetery were so-called men's knives. Figure 89:1 depicts slate knives with holes drilled in them. These slate blades were connected to wooden handles by a bone dowel.

A second widespread type of knife, represented in the Old Bering Sea burials, is made of siliceous slate and various flint-like stones (Fig. 91). These knives always have a tang. The technique of making them combines grinding (Fig. 91:16, 17) and retouch (Fig. 91:18–20). It should be emphasized that these tools are reminiscent in form of spear points, but, unlike spears, the knives were made in significantly larger, and their cross sections are thicker. The handles of the tanged knives deteriorated.

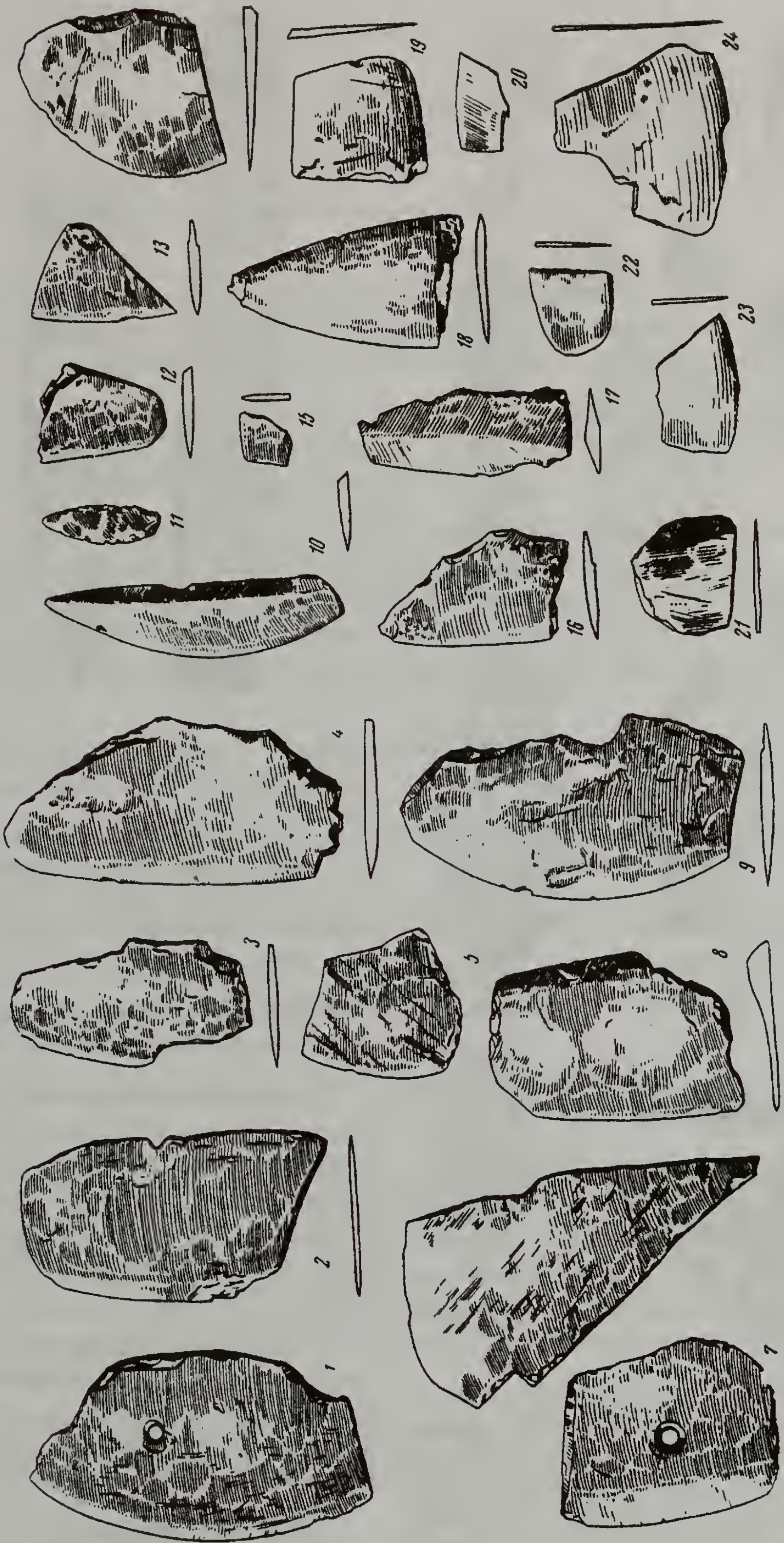

Figure 90. Knives: 1–3—from Burial 23(58); 4—from Burial 22(58); 5–7—from Burial 12(58); 8—from Burial 7(58); 9—from Burial 10(58). Fragments of slate tools: 10–16—from Burial 19(57); 17–18—from Burial 7(57); 19—from Burial 2(57); 20—from Burial 10–11(57); 21–23—from Burial 8(57); 24—from Burial 1(57).

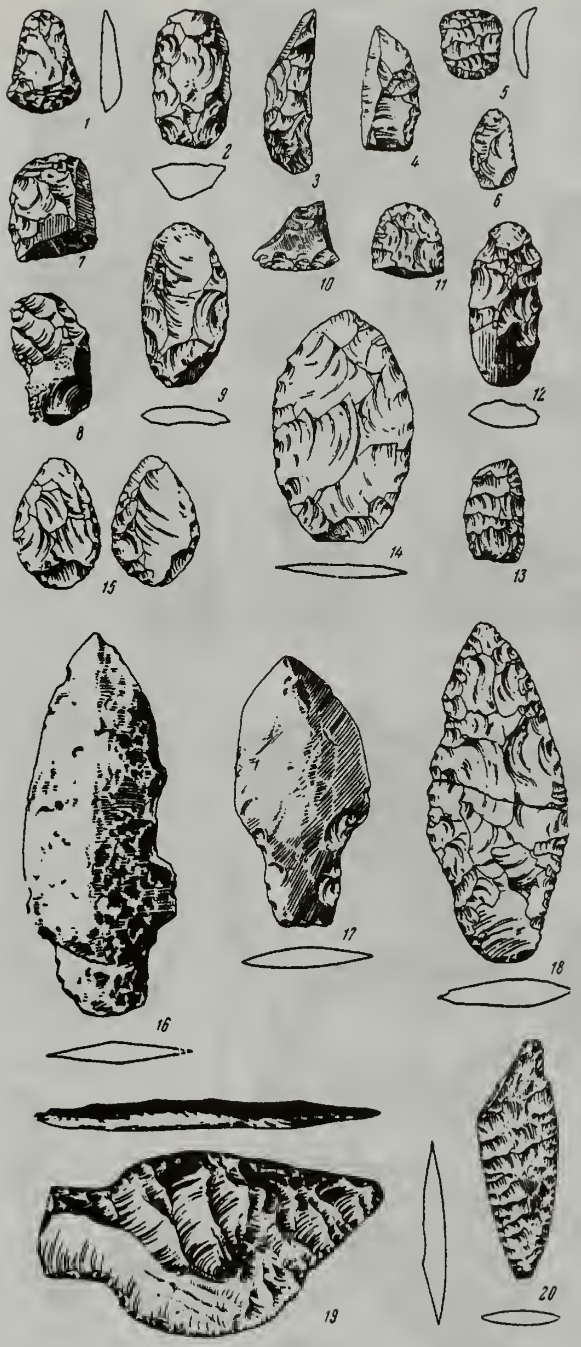

Figure 91. Artifacts of stone: 1—from Burial 6(57); 2—from Burial 7(57); 3—from Burial 7(58); 4—from Burial 6(57); 5—from Burial 19(57); 6—from Burial 22(58); 7–8—from Burial 22(58); 9—from Burial 19(57); 10—from Burial 9(58); 11—from Quad C-1 (1958); 12—from Burial 19(57); 13—from Burial [?](58); 14—from Burial 23(58); 15—from Burial 19(57); 16—from Burial 4(57); 17—from Burial 1(57); 18—from Burial 23(58); 19—from Burial 6(59); 20—from Burial 6(59).

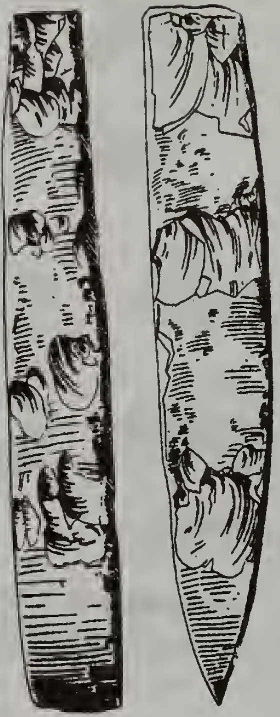

Figure 92. Adze-axe.

In addition to the above types of knives, there were also complex knives at Uelen. The handles of these were equipped with retouched stone insets (Fig. 85:9).

It should be noted that the knives vary both in technique of preparation and in form.

It is necessary to emphasize that by the Old Bering Sea stage of Eskimo culture engraving instruments and burins were equipped with a metal working edge, which, besides allowing these tools to execute their primary assignment—working bone—permitted them to be successfully used as a knife.

Metal tools were rather widely employed for working walrus tusk and were used to make the finest slots in toggling harpoon heads. The complex curvilinear design was applied with iron burins. Drills were equipped with metal bits.

However, even though iron was used in the Old Bering Sea-Okvik stage of Eskimo culture, this culture was, on the whole, Neolithic.

Chapter 9

Representational Art

The rich and complex art of Old Bering Sea is widely represented in the materials of the Uelen cemetery. In its traditions, it is connected with deep antiquity, except for this it is significantly richer and in many respects more interesting than later stages in the development of Eskimo culture.

These differences are especially evident in the realm of representational art, and it is very clear that Old Bering Sea-Okvik forms of early Eskimo culture—uncommon in the style and richness of their art objects—have attracted the attention of researchers for a long time.

The mutual connections between the peoples of Northeast Asia and those of very distant lands can be traced to some degree in the art materials. The Old Bering Sea period's design and sculpture reveal these connections especially distinctly. Some special features peculiar to the earliest Eskimo cultural sites, not only on the Chukchi Peninsula but also in North America, are probably genetically connected with the Neolithic culture of Priamur'e and the culture on the islands in the northern Pacific (Okladnikov 1950:29).

Very many walrus-tusk objects belonging to Old Bering Sea-Okvik times are decorated with a complex and rich curvilinear design.

Archaeological materials enable one to trace, to some degree, the mutual connections of peoples of Northeast Asia and those of very distant lands.

These connections are especially clearly sketched in the art of the Old Bering Sea period.

Almost all the bone tools of this time are decorated with a complex and rich curvilinear design of deeply incised smoothly curving lines, bordered by dots of concave ovals or circles, often concentric, with a dot inside.

Early Bering Sea sculpture is represented by anthropozoomorphic figures on walrus tusk, or, more rarely, on wood or stone.

Along with comparatively rare realistic representations, there are many figures that differ in ornate form, being sometimes covered with abstract curvilinear designs. As a rule, these designs are closely connected with the object's form and subject to its outlines. On all the harpoon-complex objects, one can see a definite goal orientation in the design. That tendency can be especially clearly seen on toggling harpoon heads—the primary and basic sea-mammal hunting tool. This design had a special meaning to the early hunter, breathing spirit into, thereby giving the tool it its own supernatural, powerful helper, whose strengths a man could make use of.

The early Old Bering Sea and Okvik culture, unusual for the difference, expressiveness, and richness of the art, is theorized by many researchers to be foreign.

Okladnikov wrote:

> The decorative art of the Bering Sea peoples is so complex and complete in itself that some investigators conclude it has a foreign origin, that it originated far to the south, in Polynesia, among the Maori, or even in China during the Chou period. However, there is another more probable explanation for this

> enigma. Such curvilinear design originated during the second or third millennium B.C. and developed among the Neolithic tribes of Priamur'e and [the people of] the neighboring maritime islands of East Asia. From there, it could have spread in deep antiquity to the north, to the land of the Eskimos (Okladnikov 1951: 41, 42).

Such an explanation for the appearance of curvilinear design in Old Bering Sea culture seems well founded because it is largely supported by the fact that iron penetration into the extreme northeast from the regions of Priamur'e. But it is possible that not only cultural influences but also some outside ethnic groups penetrated the region of distribution of early Eskimo cultures. However, this does not explain the origin of the Eskimos as a result of a migration that brought an economic and cultural complex to the Bering Sea region that was developed somewhere outside this territory.

By the same token, Old Bering Sea art cannot be viewed as having been brought from outside, although there was undoubtedly some foreign influence. Accordingly, it is possible to cite three sources: in the early Eskimos' designs there are definite elements of Neolithic traditions, brought from regions of the northern Pacific; in the sculpture, one can trace a connection with several well-known images of the east coast of the Pacific Ocean that were widespread among the Tlingit; and, finally, the penetration of the Chukchi Peninsula by the Chukchi, which occurred by the end of the Old Bering Sea-Okvik period, brought about significant changes in both representational art and the whole material culture of the Old Bering Sea people.

Many works concerning early Eskimo design and its styles have been published. However, these works have treated only certain local territories, that is, those from which the relevant material was obtained. It is interesting that the early Eskimo Uelen and Ekven cemeteries are comparatively close to each other—35 to 40 kilometers—but even with this regional closeness, there are some local differences in the realm of art.

In this work, we will use Henry Collins's widely known periodization of early Eskimo ornamentation (Collins 1937) to determine the style of decoration.

Many walrus-tusk objects are decorated with engraved or sculpted animal-head images. Along with zoomorphic images, there are often objects that combine in themselves certain styles of design, zoomorphic decoration, and even images of a human or the human face.

In most cases, all these objects of representational art are very closely connected with the early Eskimos' material and spiritual life.

Some decorated walrus-tusk plates, whose assignments are difficult to determine, lose their indeterminacy and enigmatic nature, compared with ethnographic materials, and may be classified as connected with spiritual culture, specifically, dancing. In particular, the decorated plates illustrated in Figures 93:1 and 94:2 fall into this category.

The fragmentary decorated plate (Fig. 93:1) found in the paired Burial 2–3(59) was located on the female skull. This is an arc-shaped bent plate, about 2 millimeters thick with a maximum width of 4 centimeters and a total length of at least 34 centimeters; only two fragments of its right part, the best preserved, are reproduced in the illustration. The plate is covered with a complex design, in which two symmetrically placed ellipses (one can be seen in the illustration) play the central role. There was an illustration similar to a Maltese cross with a dot in the center and a complex herringbone pattern of short strokes inside the ellipse, and double line surrounds the ellipse. The field between the ellipses is filled with slightly curved lines, with a herringbone pattern on them. In the center of this field, and consequently of the whole crown, is a circle with a dot and several teeth along the circumference of the circle.

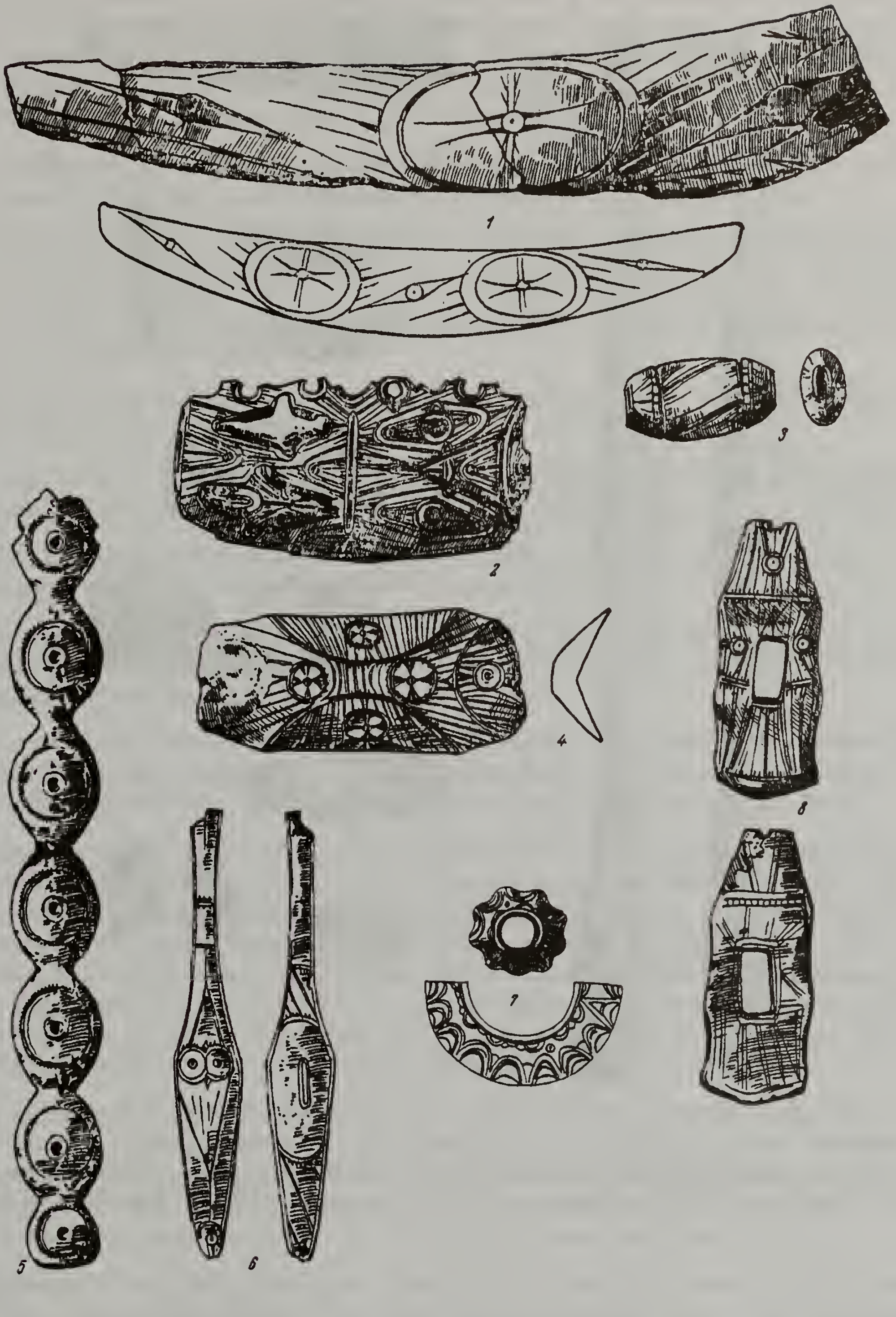

Figure 93. 1—diadem from Burial 2–3(59). Decorated items: 2—from Burial 20(59); 3—from Burial 17(59); 4—from Burial 17(59); 5—from Burial 5(58); 6—from Burial 19(59); 7—from Burial 6(59); 8—from Burial 20(59).

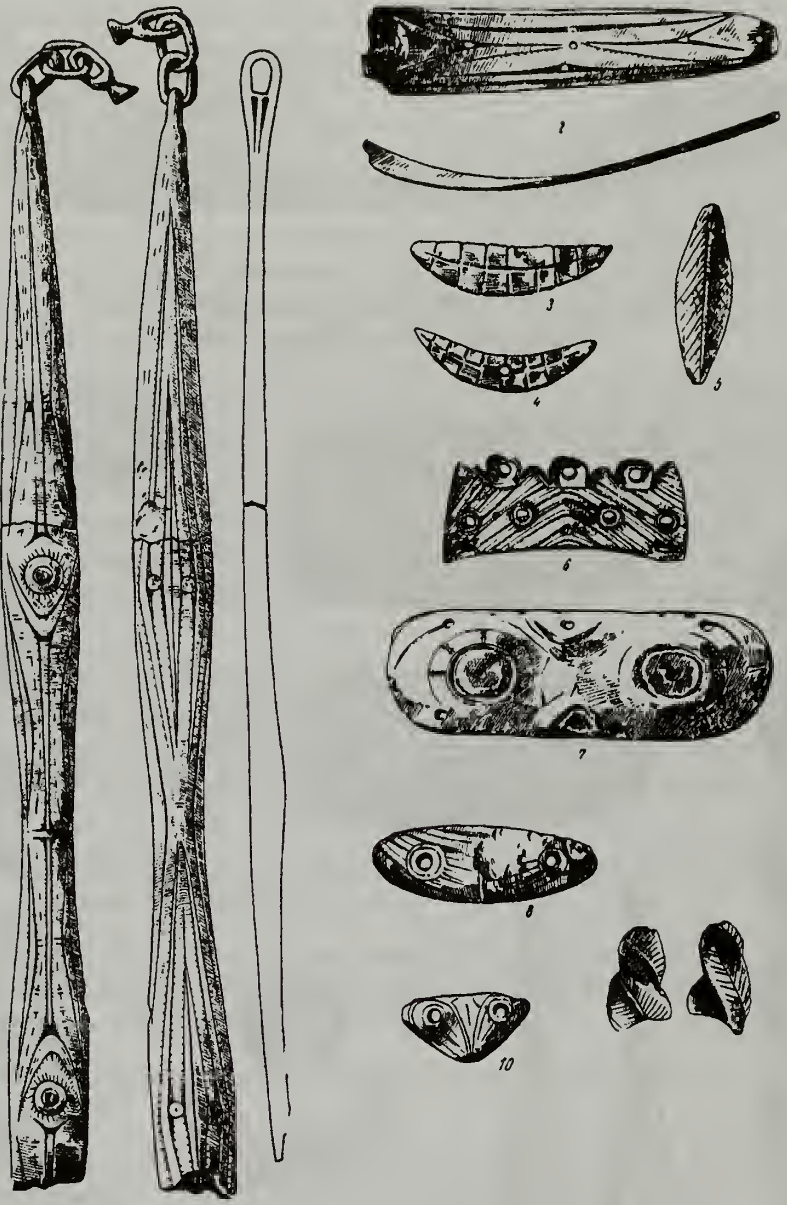

Figure 94. Plate with chain links, from Burial 1(55); 2—plate with decoration, from Burial 4(60). Decorated items: 3, 4, 7, 8, 10—from Burial 16(59); 5—from Burial 23(50); 6—from Burial 20(59); 9—from Burial 3(58).

The second crown (Fig. 94:2) was found in Burial 4(60). It lay on a skeleton's the lower jaw (the only part of the skull that was preserved). Only one part, a three-centimeter-wide piece, was preserved. Part of the crown bears two Y-shaped figures, filled out with toothed lines. Farther along, there is an illustration of concentric circles with teeth. Unfortunately, it is impossible to resolve whether or not it was in the center of the crown, or if there were two such illustrations on it.

We see ethnographic parallels to these two crowns in specially embroidered hide bands that the Naukan Eskimos wore on their heads during dances dedicated to a killed bowhead whale.

It is also possible that the decorated plate (depicting chain links) found in Burial 1(55) is connected with dances or other ritual activities (Fig. 94:1).

Based on informants' reports, this plate may have served as a drumstick. The fact that the plate is broken on one side supports this idea.

However, it should also be noted that ethnographically recorded drum sticks drumsticks were made primarily of baleen, wood, and bone.

This plate's design consists primarily of straight lines with teeth, punctate lines, and circles with dots in the center. Flowing subovals border two of the largest symmetrical eyes.

Various ornamental compositions on plates and small walrus-tusk objects of unknown, but most probably decorative, assignments are represented in Figures 93 and 94.

These compositions range from the simplest patterns (Fig. 94:3, 4) and illustrations (Fig. 93:5) to very complex compositions of straight and curved punctate toothed lines, concentric circles, eyes, dots, and cross-shaped illustrations (see 93:4).

In the described specimens of Uelen decorative art, it is easy to recognize many elements that Collins distinguished. Punctate and toothed lines (namely, Elements 4 and 5) on the plate in Figure 94:1 can clearly be assigned to the first Old Bering Sea style that Collins distinguished (Collins 1937:47, Fig. 6).

The design in Figure 93:4 is closer to the Old Bering Sea second style. However, on these items one notes several elements that Collins did not distinguish and that are uncharacteristic for the objects from St. Lawrence Island that he published, but that are very characteristic of Uelen decoration. This especially includes lines with herringbone strokes, which are added to the first style here; lines with complex alternating small teeth, which must be added to the second style; and the wide distribution of the Maltese cross motif inscribed in a circle. These features suggest a local, distinct design in the Old Bering Sea time that changed very much, even within the bounds of a comparatively small region. What is more, in one and the same burial, one finds objects decorated in different styles.

Thus, in Burial 5(58), a 2A2y2M3 harpoon head (Fig. 27:36) is decorated with Collins's the first Old Bering Sea style patterns (Element 12). Harpoons 1BMX3 (Fig. 27:37, 38) have rhomboid, net-like fields and ellipses similar to Elements 9 and 12 of the second Old Bering Sea style Collins identified. Harpoon head 1A2XP (Fig. 27:39) is decorated in an entirely different style, much closer to the decoration on the heads Rainey published (1941:483–485), and which he characterized as Okvik.

The third Old Bering Sea style (Covarrubias 1954:147), with eyes formed in relief, bordered by small bundles of flowing lines, can also be traced to the Uelen cemetery (Fig. 25:18, 26), although on the whole this style is more characteristic for the Ekven cemetery, as it appears on the "winged objects" from Burial 17(61) and 53(62) (Figs. 54, 55). The "winged object" from Burial 24(58) is similar in decoration to the "winged objects" in 17(61) and 53(62) (Fig. 49:6).

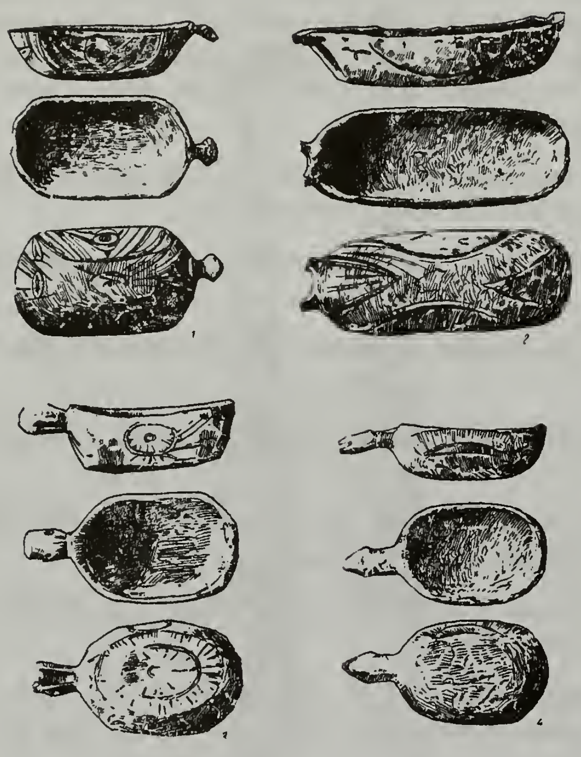

Figure 95. Bowls: 1—from Burial 8(59); 2—from Burial 12(59); 3—from Burial 17(59); 4—from Burial 17(59).

There is curvilinear decoration covering not only these objects but sometimes also more or less realistic sculpted walrus-tusk images of animals and people.

Thus, the large anthropomorphic image from Burial 14–15(58) has realistically executed legs and arms and a somewhat more schematic but nevertheless clearly outlined face, but on the back, this sculpture is covered with curvilinear "eyed" Old Bering Sea decoration (Fig. 100). A sculpted walrus-tusk duck was completely covered with Punuk-style decoration (Fig. 96:13), as was a seal's image (Fig. 91:1), on which deeper hatches provided eyes, nostrils, and a mouth, while other hatches had an ornamental character.

In other cases, by contrast, the images of animals and human faces are part of the design that covers the object, being compositional elements of this design and, therefore, executed in the same pattern. This can be especially clearly seen in "winged objects," because such sculpted images appear to be inserted into the ornamental composition covering the object. Thus, sculpted images of sea mammals on the lower part of the "winged object" from Ekven cemetery (Burial 10[61]) (Fig. 53:20) appear to be fused with the design, several parts of the animal's body being executed and emphasized by means of decoration. In this case, the decoration emphasizes the eyes of two seals on the "winged object." Here, the design, itself very tentatively represents sea mammals' eyes and mouths, is located on the upper surface of the "winged object's" wings. It should be emphasized that the decoration covering the whole object, and the decoration emphasizing individual details on the images of sea mammals' heads, were on the whole executed the same way, in a single style.

Zoomorphic decoration in the form of two sculpted walrus heads decorating a "winged object" from Burial 17(61) (Fig. 54:24), just as in the case described above, combines elements of sculpture and engraving. Everything that has been said also applies to several other "winged objects," of which those from Burial 7(59), 9(61), and 49c(62) should especially be noted. On the wings of the first (Fig. 49:8), two reposing animals that are facing one another and the center of the front part of the "winged object" are very distinctively illustrated; their bodies are bent as if spread along the sides of the wings.

In Figure 54:22 is a "winged object," on both the upper and lower sides of which very stylized zoomorphic images were also created by composition of some elements of abstract design. As can be seen from the above, and as depicted in illustrations, zoomorphic images appear most frequently, and appear to be interwoven into the decorative architectural composition of the "winged objects." Figure 59:39 depicts an exception; on the lower side of this object, a distinct, if schematic, human face can be traced.

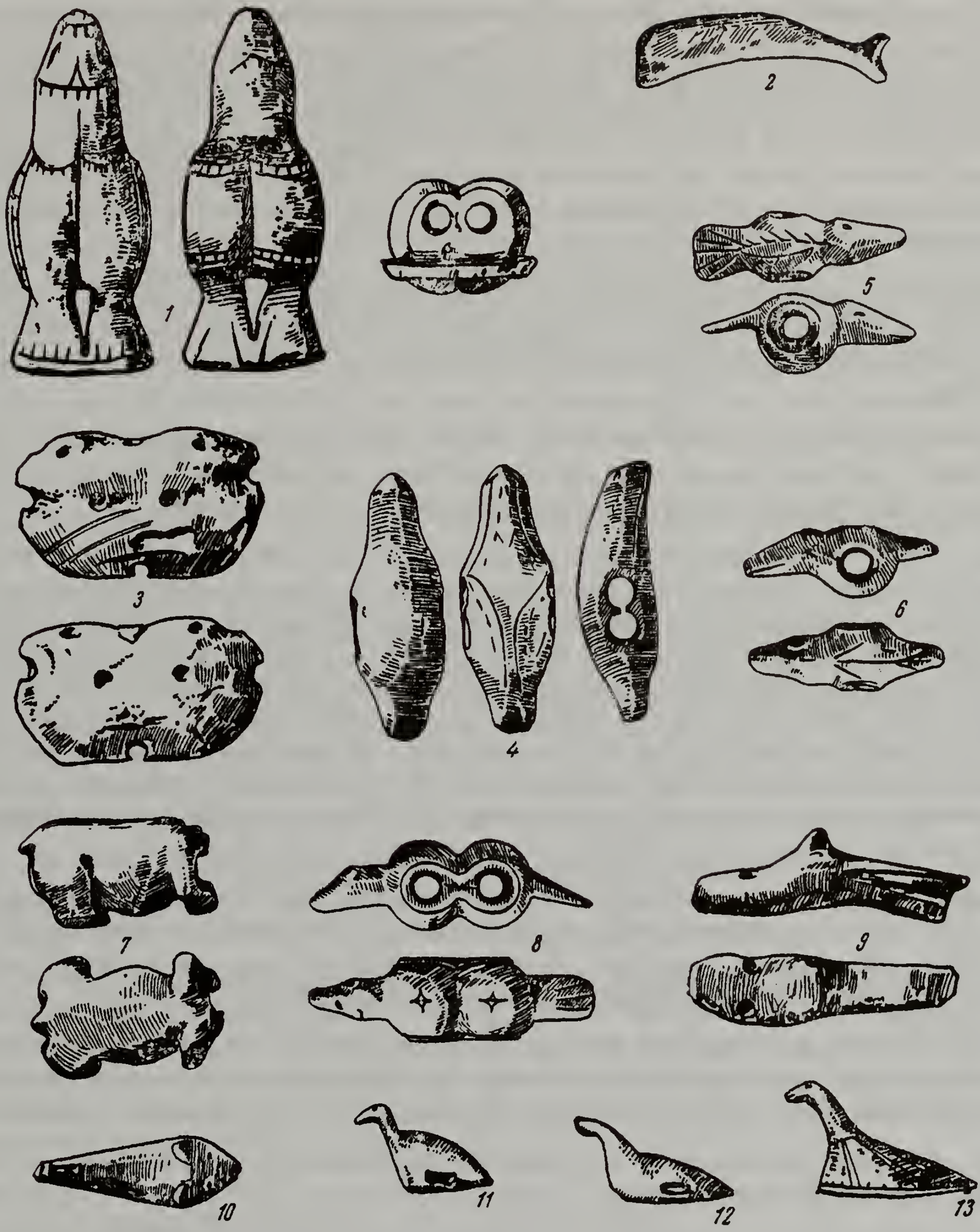

Figure 96. Seal figurines: 1—from back dirt of 1955 trench; 4—from Burial 3(57); 2—whale figurine, from Burial 17(57); 3—zoomorphic head, from Burial 19(59). Figurines of tundra animals: 5—from Burial 4(57); 6—from Burial 4(57); 8—from Burial 4(57); 7—figurine of a bear, from back dirt of 1955 trench; 9—animal head, from Burial 9(59); 10—arctic fox head, from Burial 20(59). Bird figurines: 11—from back dirt of 1955 trench; 12—from Burial 1(57); 13—from Burial 1(57).

Bas-relief images of seals on a decorated plate were formed somewhat differently (Figure 93:2). The sculpture and engraving appeared to be executed on separate fields, reminiscent of a rhomb. These "rhombs" may possibly have illustrated the individual ice floes on which seals lay. Images of seals were executed in bas-relief form in two such fields. The sculpture's contours are generally in accordance with the design, whereas the details, especially the front flippers, intersect the lines of the design. One of the seals (the second is very poorly preserved) is covered by a design of the same style, but the arrangement does not continue the lines of the plate surface; instead, it separates the sculpture from them. The illustration of the animal's muzzle, eyes, and mouth are in accordance with the design but are drawn very clearly.

Thus, if on "winged objects" the images of animals often merge with the lines of the design, as if dissolving into it, in the image of the seal examined here, it is possible to see the artist's desire to distinguish the animal's image in the form of prominent relief, having allotted it some features characteristic for this animal.

Zoomorphic images, as decoration on an object, can be broadly supplemented by individual sculpted details, which also decorate other objects of utilitarian assignment. In this group of objects, it is especially necessary to distinguish tools connected with sea-mammal hunting tools.

Figure 43:1–4 depicts harpoon-shaft heads of classical Old Bering Sea appearance. They are all decorated with a design, common in this period, that is similar in its compositional elements to Collins's first style. However, characteristic of these heads is the zoomorphic decoration in which, despite stylization, the upper parts of walrus heads clearly emerge (Fig. 43:1–3), embracing the upper part of the harpoon shaft head on two sides, as if the tusks retained this upper part of the head in which the harpoon foreshaft is set. It is possible that, in this case, the unknown sculptor wanted to emphasize that these are the heads of predatory walruses that attack all sea mammals, with the exception of the orca and the whale. A half-sculpted head that adorns a harpoon-shaft head (Fig. 43:4) must have represented the bared teeth of a polar bear—among the best hunters of sea mammals-since the tusks and teeth are clearly emphasized in this composition. The remaining details, which are engraved, are somewhat tentative.

Pressure-flaker and ulu handles can be assigned to this same group of objects, but they are not connected directly with sea-mammal hunting here. In several cases, these handles are decorated with zoomorphic designs and sometimes also with a composition including one or several animals. An example of a pressure-flaker handle with a sculpted animal head is the object illustrated in Figure 88:1.

In Figure 75:6 is an ulu handle in the form of a stylized head. The object in Figure 75:8 illustrates two sea otters lying on their backs. It should be especially emphasized that the way in which these animals are represented is different from the way most are represented in the Uelen cemetery materials.

It is possible that this composition approaches the Aleut manner in how it treats the sea otter, and it is also possible to discern Tlingit influence.

The zoomorphic design often adorned the so-called sacrificial bowl. Some of these vessels had no sculptural decorations and were only engraved. However, some of these objects are decorated with both engravings and sculpture. Thus, Figure 95:3 illustrates a sacrificial bowl, the handle of which was made in the form of a walrus head: the head appears to extend from the wall of the vessel and is joined to it by the ends of the tusks. It is interesting to note that not only the external surface—the sides and the bottom—of the bowl itself is covered with design, but so is the sculpted walrus head. The design is one that is peculiar to the Old Bering Sea period, in which the sculptor makes concentric circles with a depression in the center to represent the walrus's eye by means of design.

Interesting also is a sacrificial bowl (Fig. 95:4) with a handle in a zoomorphic image. However, because it was poorly preserved, both the tusk and the design on this sacrificial bowl are indistinct.

In Chapter 7, among the objects of auxiliary hunting equipment, there were special snap hooks intended for transporting seals killed on the ice mentioned. These objects are illustrated in Figure 96:1, 4–8.

As a rule, this complex of tools was created through sculpting animals, which can be distinctly seen in the illustrations. Being particularly utilitarian, such an object could have also fulfilled a magical function for the early hunters, because it was not only a practical aid in hunting, but also an arbitrator between the hunter and the spirit of the killed animal.

The examined snap hooks, which are in the form of a seal and a bear (Fig. 96:1, 7), have holes for thongs along the sculpture's long axis and consequently were placed parallel to the towing carcass. Other snap hooks in this illustration have transversely arranged holes. In Figure 96:6 and 8, and especially 5, an animal's head, most likely that of an arctic fox, merges with and ends in a bird's tail, and a broad rim projecting beyond the line of the figure's body makes a hole. Not to suggest a direct connection, it should nevertheless be noted that such a composition is somewhat reminiscent of the well-known so-called bird chariots of the late East Asian Bronze Age. These bird chariots and their motifs penetrated far to the north, into the ethnic territory of the Even, as has already been noted by ethnographers (Seligman 1928:251, Figs. 3a, 3b; 252, Fig. 4).

The objects described above, which are both ornamented and bear zoomorphic designs, belong to a decidedly utilitarian group of tools.

To the second group of zoomorphic images belong animal sculptures that were made as separate figures and not connected with economic activities. These objects were most probably amulets. Figure 96:2 illustrates a rather schematically executed sculpture of a whale, while Figure 96:11–13 depicts three ducks. Judging by the special cut in the body of the objects, these sculptures were hung on or sewn to clothing. A pendant (Fig. 96:10) in the form of the head of a fox or arctic fox may have been an amulet.

It seems impossible to determine the assignment of the animal heads represented in Figures 96:9 and 97:4 because these sculptures were initially attached to other objects that were not preserved.

It is also difficult to determine the assignment of the animal figurines in Figure 97:2 and 6. These are most probably sculptures of bears. The figurine of a seal (Fig. 97:3) was, unfortunately, poorly preserved. It is possible that these objects could also have been children's toys.

All the above objects and images of animals were made of walrus tusk, except for an amulet probably made of fluorspar. This stone figurine was found in Burial 4(59) and is the only example of a stone representation of an animal's head, most probably that of a seal. If this image is compared (Fig. 98:1-3) with the image of the seal presented in Figure 96:1, the similarity is quite evident. It is substantially more difficult to determine if there is any image on the other side of this stone amulet, or if it is just one of the depressions in the object's surface.

Despite the comparatively small number of zoomorphic objects from the Uelen cemetery, it is nevertheless possible to trace certain variants in the zoomorphic sculpture.

First, the representations are realistic, though mostly animal heads are represented. Thus, it is possible to discern an arctic fox's the head on an object from Burial 20(59) (Fig. 96:10). A head on a snap hook from Burial 4(57)8 is also rather realistic. There are similar heads in Figure 96:5 and 6, but they reveal some schematic tendencies that are clearly reflected in the design on the drill support from Burial 13(58) (Fig. 97:5) and attain their greatest expression in the images of bears in Figure 97:2 and 6.

These sculpted images are characterized by the cleanly depicted elongated muzzle, in which only the eyes, ears, and schematically incised mouth are marked.

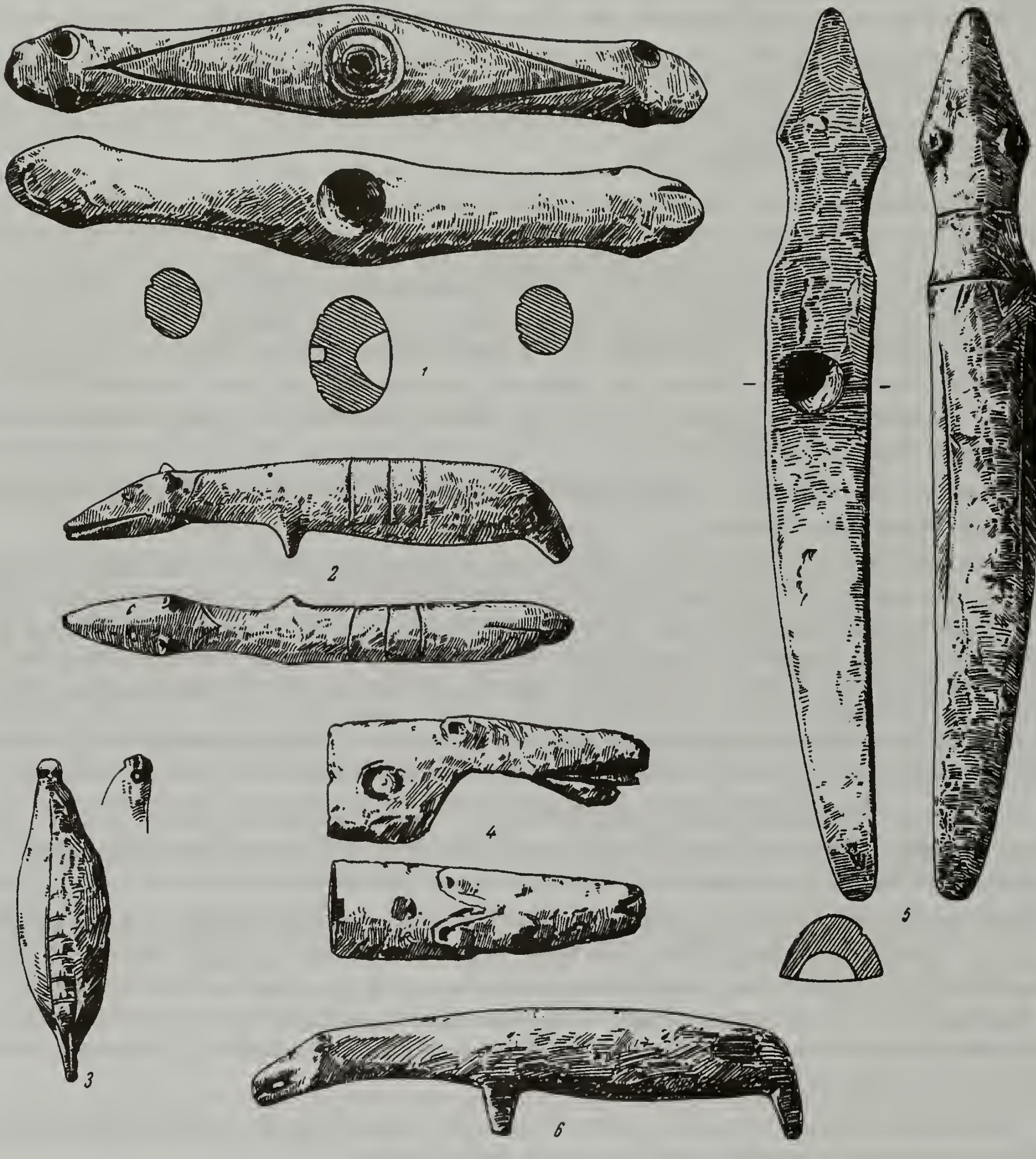

Figure 97. Drill supports (mouthpieces): 1—from Burial 7(58); 2—bear figurine, from Burial 13(58); 3—seal figurine, from Burial 8(59); 4—moose head, from back dirt of 1955 trench; 5—drill support from Burial 13(58); 6—bear figurine, from back dirt of 1955 trench.

Another way to depict animal heads is also schematic but gives them exaggerated rounded forms. The image here is so tentative that it is difficult to determine the animal being represented. Characteristic of this style are very broad and deeply drilled holes for the eyes, and sometimes for the nostrils as well (Figs. 96:9; 97:1; 99:1). It is possible that the holes for the eyes in these images once held inlays as evidenced by the fact that holes of similar dimensions in ornamental compositions sometimes had inlays. Thus, in an anthropomorphic figure from Burial 14–15(58) (Fig. 100), tiny wedges of tusk were inlayed, as was wood in a plate found in Burial 20(59) (Fig. 93:2).

Sea mammals' bodies, as a rule, are more or less realistic (see the image of a whale in Figure 96:2, and the numerous images of seals). Even when the sculpture is covered with abstract designs (Figs. 96:1, 4; 97:3), the proportions of the body, muzzle, flippers, and sometimes even the animal's small tail are very distinct. On images of land animals, there is much more stylization, as is evident on sculptures of bears (Fig. 97:2, 6).

Some figures are so stylized that they lose their anatomical proportions. In Figure 96:6 and 96:8, the animal-shaped snap hooks are clear examples of such deformation.

Of course, the variants described can be separated only very tentatively because, in almost every image, the individual mark of the carver is strongly felt. However, in the objects, the artistic touch can be interpreted as reflecting some ritual-magic purpose or idea, and so there is a certain uniformity, even canonization, of the form.

Such repetition in design is largely peculiar to toggling harpoon heads. In animals' images, it is observed, in part, in the form of snap hooks, but can be especially clearly seen in the zoomorphic design of harpoon shaft heads. Comparing the head from Burial 6(59) (Fig. 42:7) to heads from Burials 1(55), 4(60), and 14–15(58) (Fig. 43:1–3), one can see that the rather great difference in these objects' design, the treatment and compositional position of the walruses' heads and tusks are almost completely identical. Even on the head from Burial 4(58) (Fig. 43:4), where not a walrus but a bear is illustrated, one can trace similar compositional methods.

Zoomorphic design and sculpture depicting walruses and tundra animals dominate the representational art of the early Uelen people. Less well represented are anthropomorphic images, of which we found a total of 14 specimens in the Uelen cemetery. It should be noted that two objects among the small number of anthropomorphic sculpted images combine both anthropomorphic and zoomorphic motifs. These include the small broken bow of a drill from Burial 2–3(59) (Fig. 99:7) and a tool handle from Burial 7(59) (Fig. 98:8). The walrus-tusk bow drill (Fig. 99:7) is richly decorated with a curvilinear design, which changes into a semi-sculpted image of two bears' heads in the bend of the tool. The features peculiar to a bear's head are emphasized as ornamentation, though on the whole, this zoomorphic design has a purely tentative character.

Substantially more realistic is the image of a human face, the physical anthropological type of which, unlike other human images, is not Eskimoid but more probably North American.

A zoomorphic image on a tool from Burial 7(59) was poorly preserved, just as was the carving of a human face on the other end of this tool. Here, it is possible to distinguish a nose and cheekbones; where the mouth and lower jaw should be, there is a hole in which something was set. Because the object decayed, the anthropozoomorphic design is very difficult to trace but is nevertheless obviously present.

An image of a human face on the a mattock's handle was also poorly preserved (Fig. 98:7). It is interesting to note that there is no zoomorphic design on this tool.

Though also quite schematic, there is a distinct human face on a stud from a float (Fig. 99:2). Usually, the front of such a stud is covered with abstract curvilinear designs. In this case, the elements of design are almost absent and can be seen only on the lower part of the image. However, the human face was made by a series of scratched and lightly engraved lines on the walrus tusk surface, that is, by

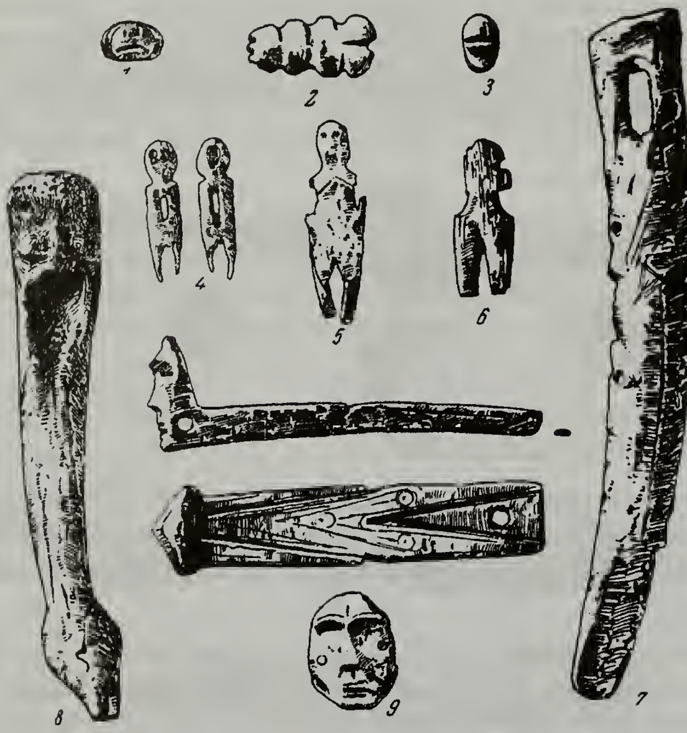

Figure 98. Seal figurines of fluorite: 1—image of a seal muzzle; 2—view of figurine from above; 3—view of figurine from behind. Anthropomorphic images: 4—from Burial 17(59); 5—from Burial 1(57); 6—from Burial 2(55); 7—from Burial 10(59); 8—from Burial 7(59); 9—from Burial 7(59).

the same methods used to apply decoration to walrus tusk. There are also human faces on three other objects, two of which (Fig. 99:1, 4) are also oval. These images (Fig. 99:1, 3, 4) most probably served as amulets or decorations.

A schematically represented human face (Fig. 99:1) was executed by basically the same methods as on Figure 99:2, however, drilling was also used. Two holes, not drilled through, represent eyes. A hole drilled through the center of the face, served for attaching the amulet. At the corners of the mouth there are two more holes, not drilled through, which evidently represented labrets (bone ornaments set in a slit in the lips).

The amulet in Figure 99:4 has a special hole on top to suspend it. This image of a human face was made differently, more realistically representing the characteristic features of the Old Bering Sea people. Unlike the images above, which were executed more graphically, this amulet—in the form of a human face—was semi-sculptural. In addition, the broad, prominent cheekbones and slanting cut of the eyes, characteristic of the Eskimo face, were distinctly represented.

Because the tusk was poorly preserved, it is difficult to say anything about this object with a rather schematically represented face (Fig. 99:3), but it is possible that it is also an amulet.

Figurines of people, made as full sculptures (Figs. 98:6; 99:6), were undoubtedly amulets.

Figure 98:6 was made of wood and executed very tentatively. It has no face on it but rather a schematically portrayed head, torso, and—now more realistically—lower part of the body. Amulets or guardians and helpers are widely known in the ethnographic materials among the Chukchi and described by W. G. Bogoras.

We find a parallel in the work of Henry Collins to the wooden figurine being presented. He illustrates a wooden statuette similar in form to the one from Uelen and dates it to the Old Bering Sea period. Collins (1937:Pl. 59, Fig. 16) considers it a toy.

Two similar figurines, these of walrus tusk, were also tentatively executed. However, they were given some facial features (Fig. 98:4, 5).

Of special interest is a sculpture in the form of a female statuette. This object (Fig. 99:6) was found in Burial 20(59). It should be stressed that although the figurine is somewhat schematic, which is reflected in the absence of arms and in illustration of the eyes, mouth, and sexual features, this sculpture nevertheless transmits a woman working with a lamp in a dwelling. In particular, the bent legs (only one of which was preserved) indicate she was a woman sitting on the floor, feet crossed under her, legs bent at the knees—a customary position for women doing this task. This somehow naturalistic detail in the treatment of a female statuette is all the more interesting because the figurine is an amulet on which such parts of the body as the arms and breast are very tentative.

It is hardly possible to determine precisely the assignment of the objects represented in Figures 98:9 and 99:5. An anthropomorphic statuette on walrus tusk (Fig. 99:5) was found in Burial 2–3(59). It transmits a head, face, and upper part of the body. It can be distinctly seen that this figurine was represented as clothed. Behind the back we see a thrown-back hood of a parka-like coat, and by its size it can be supposed that this figurine represented a woman, since ethnographic data attest to the fact that male parkas were often made without a hood. On the lower part of this figurine there is a square cut, by which the anthropomorphic object was fastened to something. Possibly the figurine with the hood could have served to decorate a staff, but this is only a supposition.

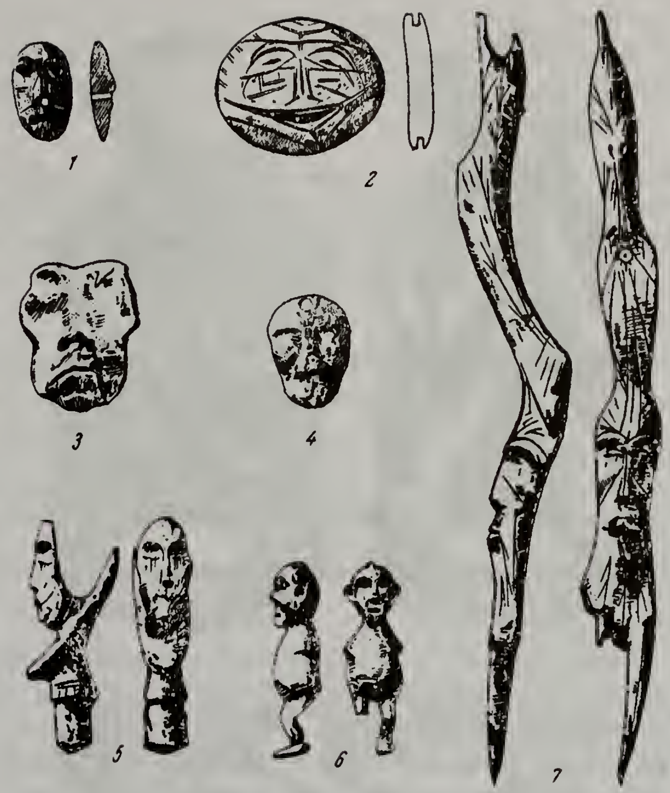

Figure 99. Anthropomorphic images: 1—from Burial 22(58); 2—from Quad B-1 (1958); 3—from Burial 19(59); 4—from Burial 10(59); 5—from Burial 2–3(59); 6—from Burial 20(59); 7—from Burial 2–3(59).

In Figure 98:9 is another object whose assignment is unclear; the image of a human face on it is quite distinct.

Decorative circles on cheeks may illustrate a tattoo but perhaps represent labrets. Because the object was inadequately preserved, it is difficult to say. The top of the item is decorated with an Old Bering Sea design. On the body, there are two perforating holes: one below the anthropomorphic image, the second at the opposite end. Their assignment, like that of the object itself, is unclear. A similar object was found at the Ekven cemetery. This decorated walrus-tusk object also has a human face on it. An illustration of this latter sculpture has already been published (Arutiunov et al. 1963:67, Fig. 6).

Parallels to these objects, however distant, can be found in Rainey's work: he illustrates two images of the human face, one of which is given appears on an ornamental object (Rainey 1941:Fig. 24:5, 6).

The human figure from Burial 14–15(58) has no parallel: it is entirely unique (Fig. 100). Its purpose, as we have already noted, may have been connected with sea-mammal hunting, with this figurine

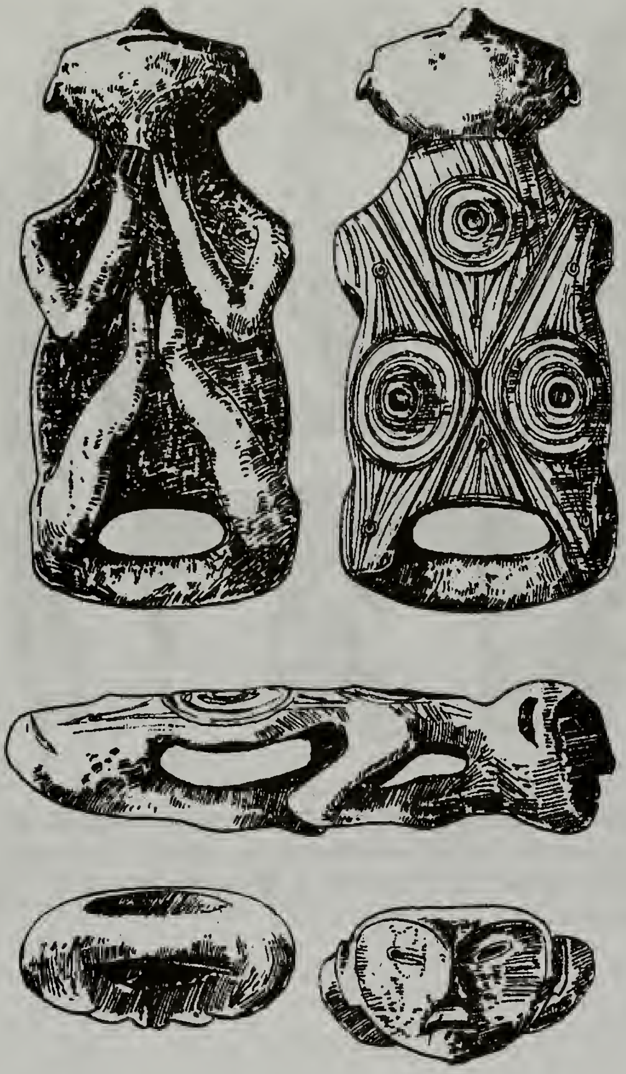

Figure 100. Anthropomorphic figure from Burial 14–15(58).

perhaps served as a snap hook-amulet for hunters transporting whales. This object was described in a preliminary report by M. G. Levin (1960).

At that time, Levin theorized that this anthropomorphic figurine's pose recalled the flexed skeletons from Aleut-Eskimo burials of in southern Alaska.

It is interesting to note that 14 such skeletons were also found at the Ekven cemetery in Chukotka during two field seasons.

Judging by the flexed position of the skeletons, we can infer that burial ceremonies in Alaska and Chukotka were the same in the very distant past.

In the art of early Uelen people, we can trace several distinct tendencies, one of which is expressed quite distinctly. It attaches a mystical-magical comprehension to creative work, and its influence can be traced on objects of sea-mammal hunting that are usually adorned with a decorative curvilinear design. Sculpted decorations, especially the zoomorphic images found on harpoon shaft heads, as we have already noted, were considered sacred. They reflect and emphasize only certain very specific features of a predator grasping its prey—the bared teeth of the polar bear or the threatening tusks of a predatory walrus. Anthropomorphic images also have a considerable magical orientation, being amulets—helpers and protectors of hunters. However, even in the preparation of ritual objects like amulets, the early artists depicted real details of the surrounding environment, which they closely observed. Striving to transmit this reality to the things they were creating, the carvers often included some naturalistic strokes on very tentative images. For example, there were the previously noted bent legs of the anthropomorphic amulet in Figure 99:6, and the varied silhouettes of amulets of ducks in Figure 96, which transmit not only their pose (in Figure 96:13 it is a swimming duck, while in Figure 96:11 it is one sitting on the shore), but sometimes also a specific species of bird. In the whale figurine (Fig. 96:2), the animal's movement—diving after blowing—is communicated by the bend of its back and the turn of the tail.

Another creative tendency among the Old Bering Sea people can be seen in their striving to find the most favorable and beautiful form for both tools and objects of used in daily life.

The early master was often restricted by the search for a form suitable for work and choice of harmonic proportions, which, even without additional work, formed a complete object in all respects.

Such is the walrus-tusk adze handle (Fig. 83:7) with its rhomboid cross section and smooth, beveled cuts for the fingers. This tool is very suitable for its task and is simultaneously beautiful. Another adze handle, made of wood, has an elegant and flowing outline (Fig. 83:9). A walrus-tusk club (Fig. 47:3) lacks decoration, but the softly undulating lines along the edges, which do not compromise its usefulness, give it artistic form.

The large ulu's handle (Fig. 75:3) is another example of perfection of form among the especially practical basic tool of women's work. Five round holes made it easy to hold the knife handle and kept the tool from slipping from the hand, while four triangular incisions in the lower part of the tool allowed blood and part of the fat to flow through them when the woman was butchering such animals as walruses or bearded seals.

One handle has only some engraved lines on the upper part of the object for decoration, which only add to its architectural form, duplicating and balancing the triangular incisions in the lower part, and achieving a complete and beautiful composition.

The striving to decorate tools and objects of everyday use can be seen on many items on which one encounters complex ornamental compositions and designs in the form of sculpted zoomorphic images.

Unlike for hunting tools, the basic artistic motif here was the aesthetic attempt to make common objects as beautiful as possible.

The early master who created the motifs for decorating daily objects used the typical design elements, which were common on harpoon heads and other hunting objects. In zoomorphic sculpture, the early masters used forms of animals that were important in their hunts, and also in their cult ideas. However, cult ideas were of secondary importance, after aesthetics. Forms of animals and decorative motifs were subject to individual creativity, and each artistically decorated object of daily use is an original, individual, and unique piece of art.

Undoubtedly, the ulu handles illustrated in Figure 75:6–8 are just such works of art, being decorated with a very fine, complex, and carefully executed curvilinear design. The ulu's handle (Fig. 75:8) is not only covered with decoration, but also has a whimsical zoomorphic design in the form of two sea otters or fur seals lying on their backs.

It is curious that this is not only a very distinctive and arbitrary composition but that the motif itself is rather far from that of the usual hunting objects, and perhaps even influenced from outside, possibly from the Aleut-Tlingit region.

Men's tools, such as pressure-flaker handles, are also varied in their artistic form. Several of them were found in the Uelen cemetery, and some of those have a flattened rounded "heel" (Fig. 88:2, 3). In some cases, they are decorated with a rather complex design; in others it is absent. Shorter pressure-flaker handles can be very simple in form and completely lack decoration, but with this type of handle there are also ones encountered with zoomorphic decoration (Fig. 88:1).

These and other objects are original masterpieces of Old Bering Sea art, the value and artistic significance of which has not declined even today, though about two thousand years have passed since their creation.

Odontological Analysis of the Cranial Series from the Ekven and Uelen Cemeteries

by A. A. Zubov

The acquisition of valuable odontological material based on the series of excavated skulls is only rarely possible because of the severe wear, damage, and tooth loss. In this regard, the Ekven and Uelen series are no exception and give only an insignificant amount of material suitable for full odontological analysis. No more than 40 skulls figured in our research from the Ekven cemetery and 30 from the Uelen cemetery, even fewer for some teeth and traits. Considering the small volume of material being investigated, we thought it pointless to differentiate by gender, which would severely cut the number of groups. The total presentation of the data on male and female skulls was justified by the fact that the published odontological material used for comparison is also often not separated by gender, and the sexual differences based on odontological characteristics are mostly insignificant or so well known that their influence can be calculated through comparison.

Methodologically, we did not deviate very much in this work from the current norms for similar research, but only somewhat expanded the usual program by using several traits that, from our point of view, are rather essential (for example, reduction of the metacone, the relative sizes of the tubercles, and the distal crest of the trigonid).

The generally accepted method of measuring the meso-distal diameter of the teeth was based on where the most prominent points of the cervical third of the crown contacted the occlusive third and the vestibular-lingual.

To determine descriptive traits, the schema of A. Hrdlička (for shovel-shaped incisors), A. Dallberg (for the form of the upper molars, mounds of Carabelli, and protostylid), M. Hellman (for patterns on the lower molars), and P. Pedersen (for pockets of the enamel and differentiation of the lower premolars) were used.

While stating the results of the work, we will explain the methods further.

TOOTH DIMENSION

In measuring the teeth, we had to limit ourselves to the molars and premolars because there were too few other types. The numerical data on the absolute dimensions, indices, and modules of the crowns of the teeth for both series studied are given in Table 8.

Table 8. Absolute Dimensions, Indices, and Modules of Tooth Crowns in the Series from the Ekven and Uelen Cemeteries.

Ekven								
	VL cor			**MD cor**				
Teeth	**N**	**M**	**σ**	**N**	**M**	**σ**	**I cor**	**m cor**
p^1	17	9.12	—	17	7.56	—	120.5	8.34
p^2	18	8.89	—	18	6.99	—	128.4	7.94
M^1	43	11.97	0.481	43	10.54	0.600	113.5	11.25
M^2	39	11.92	0.776	39	9.63	0.621	123.7	10.78
M^3	34	11.04	0.822	34	8.93	0.666	123.6	9.99
P_1	15	7.64	—	15	6.93	—	110.0	7.28
P_2	15	7.81	—	15	6.86	—	118.2	7.33
M_1	29	11.13	0.364	29	11.15	0.411	99.7	11.14
M_2	30	10.78	0.529	30	11.00	0.670	97.7	10.89
M_3	24	10.47	0.766	24	10.92	0.914	95.7	10.69

Uelen

Teeth	**N**	**M**	**σ**	**N**	**M**	**σ**	**I cor**	**m cor**
p^1	11	9.23	—	11	7.53	—	122.8	8.38
p^2	10	8.92	—	10	6.79	—	142.2	7.86
M^1	34	11.93	0.686	34	10.43	0.511	114.3	11.18
M^2	33	11.90	0.613	33	9.58	0.702	124.2	10.74
M^3	24	11.18	0.843	24	9.02	0.746	123.8	10.10
P_1	9	7.87	—	9	6.86	—	114.8	7.37
P_2	8	8.18	—	8	6.78	—	112.7	7.48
M_1	14	11.26	0.391	14	11.21	0.502	102.5	11.24
M_2	13	10.86	0.550	13	11.21	0.731	96.8	11.04
M_3	12	10.50	0.926	12	11.00	0.908	95.5	10.75

The arithmetical means based on individual teeth show that the absolute dimensions of the teeth are large and quite similar for both series. Also, these series are characterized by almost identical vestibular-lingual diameters of the first and second upper molars, and, in this, an exponent of archaism can be seen. This relationship is well illustrated by the so-called third-step index (the relationship of the dimension of the second molar to the corresponding dimension of the first). For the vestibular-lingual diameter of the upper molars in the series, the index is 99.5 for Ekven, and 99.7 for Uelen.

Pedersen noted an index of a similar size (99.05) for the Eskimo series. The third upper molar in the Ekven and Uelen series yields rather sharply to the first two, especially in vestibular-lingual diameter, which can be considered a rather distinctive trait. The fourth step-index (the relationship of dimensions of the third molar to the corresponding dimensions of the first) is correspondingly the same for the vestibular-lingual diameter in the series, with 92.2 for Ekven, and 93.7 for Uelen. This index is of similar size (93.72) in the Eskimo series and in a Chukchi series as well. In this trait, these two groups are most similar to the Ekven and Uelen cemeteries' series.

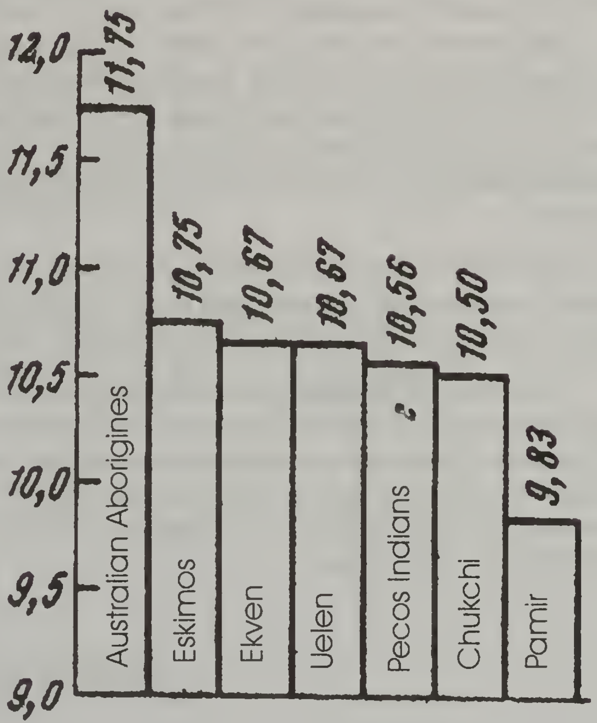

Figure 101. Size of the average module of the series of upper molars.

The crowns of the upper molars in this series extend in the vestibular-lingual direction somewhat more than is found among most modern mongoloid groups. The indices of the crowns of these teeth are, therefore, slightly increased. For example, for the second upper molar in the Ekven series the index is 123.7, and in the Uelen series 124.2. Somewhat increased indices of crowns of the upper molars are characteristic for most Neolithic, Mesolithic, and Bronze Age series, regardless of race. This trait is evidently an epoch-making feature.

The crowns' modules permit one to more directly judge the crowns' absolute total sizes than do individual diameters. To determine the absolute dimensions of the teeth, we use an average module of several upper molars (the sum of the three modules divided by 3). If this index of the following division is accepted (less than 10.20—microdontism; 10.20 to 10.49—mesodontism; 10.50 and above—macrodontism), then both series we are examining must be defined as macrodont, and it is interesting that the average modules for both series are entirely identical (10.67). As is well known, the overwhelming number of modern mongoloid series is characterized by mesodontism. American Indians and representatives of the Arctic race are the primary exceptions, belonging to the macrodont category. Based on the size of the average module of upper molars, our series are situated between the American Indians (10.56) and the Eskimos (10.75). The Chukchi series does not differ greatly from the American Indian series (10.50) (Fig. 101).

The dimensions of the lower molars are also large and closely similar in both series. The dimensions decrease from the first molar to the third. The second molar is very close to the first in mesio-distal diameter but noticeably different from it in vestibular-lingual. The large mesio-distal diameter of the second lower molar is accounted for by the fact that there is often a hypoconid. In both series, the high indices of the crown of the first lower molar attract attention. This tooth is relatively short and broad in the Ekven and Uelen series, with the vestibular-lingual diameter exceeding the mesio-distal (index 102.5) in the Uelen series. This correlation is rare in modern humans. We only once encountered such a case in the Neolithic Vasil'evska series. Such correlation is noted for the first lower molars of Neanderthal people from Krapina, Spy I, and Spy II. In our series, this might be a case of an archaic trait in the structure of the teeth.

The dimensions of both series' premolars are rather large. The second upper premolar is much smaller in mesio-distal diameter than is the first (P^2:P^1 x 100 = 92.3 for the Ekven series, and 90.2 for the Uelen), whereas by the vestibular-lingual diameter, the differences are less.

The correlations among the dimensions in the series of lower molars are interesting because, in both series, the mesio-distal diameter of the first premolar is greater than that of the second. This trait is an exponent of archaism and is encountered among fossil hominids. Among most modern series, the second premolar is larger than the first. Among Eskimos and Aleuts, there is a transitional correlation of dimensions: $P^2 = P^1$. G. H. R. von Konigswald cites other data based on the Eskimo series, where the correlation $P^1 > P^2$ is noted.

FORM OF BITE

It is impossible to speak of any detailed analysis of forms of bite in our series because the teeth of the front section were so poorly preserved. However, in those skulls where there are incisors, based on the form of the wear (uniform wear without beveling but with the development of horizontal areas), one can conclude that, in most cases, there was a direct labiodontal bite in both groups.

HYPODONTIA

Previous authors (P. Pedersen, M. Gol'dshtein) noted a comparatively high percentage of innate absence of the third molar in mongoloid groups. The frequency of this phenomenon was especially high among Eskimos (according to Pedersen, 26.7% among Asiatic Eskimos, and 23.5% among Greenland Eskimos). In the Ekven series, the frequency of innate absence of the third molar was exceptionally high (37.5% of the cases of the absence of one or several of the four wisdom teeth). In the Uelen series, the percentage of hypodontia of the wisdom teeth is substantially lower (13.0%).

Neither the Ekven nor the Uelen series had a single case of innate absence of the upper lateral incisor.

HYPERODONTIA

On skull 51 from Ekven, in the right quadrant outside the arc, an additional upper incisor was noted erupting.

CROWDING

Previous investigators' (K. Murris, L. Oshinskii) materials speak of Arctic groups commonly having closely packed teeth with their displacement from the primary line of the alveolar arc.

Our observations showed a high percentage of crowding in the Ekven series. In addition, the phenomenon was often observed in different classes of teeth (Table 9).

Table 9. Frequency of Crowding in Skull Series from the Ekven and Uelen Cemeteries.

	N	Incisors	Canines	Premolars
Ekven				
Upper jaw	31	16.1%	9.6%	16.1%
Lower jaw	29	3.4%	3.4%	0%
Uelen				
Upper jaw	23	0%	0%	4.3%
Lower jaw	22	9.0%	9.0%	4.5%

In the Ekven series, 32.2% of teeth in the upper jaw and 6.8% in the lower were crowded. In the Uelen series, the statistics are substantially lower: 4.3% of teeth in the upper jaw and 13.5% in the lower were crowded. The disparity between the two series in the frequency of crowding in the upper jaw is interesting. It should also be noted crowding in our series is encountered almost nowhere in that jaws exhibiting hypodontia, though there are cases in which both phenomena are encountered in one and the same skull, but in different jaws. Hypodontia here presents as more space for the correct position of the teeth.

THE FORM OF THE LINGUAL SURFACE OF THE UPPER INCISORS

The frequency of the so-called shovel-shaped form of the upper incisors in different populations is being very widely studied. This form is widespread chiefly in mongoloid groups, where its frequency reaches 100%, whereas in other racial groups, it rarely exceeds 15%. Oceanic peoples and the Ainu occupy an intermediate place in this regard (25–40%). A. Hrdlička proposed a classification of forms of incisors' lingual surface, having distinguished the following types: absence of the shovel-shape form (0), "traces" of a shovel-shaped (1), semi-shovel-shaped (2), and shovel-shaped (3). Some researchers add another form (4) indicating an extremely developed edge crest of the masticatory surface.

The research has shown that, with comparisons, it is best to combine forms 2, 3, and 4, calling them the "shovel-shaped" form. This method, in addition, partially removes the problem of subjectively evaluating differences between stages of the pronounced shovel-shaped form. K. Khanikhara believes that types 2, 3, and 4 are variants within the group of people bearing a gene for shovel-shapedness but that they are not defined by genetic factors, just as types 0 and 1 variants are not determined by genetic factors in the group where a gene for shovel-shapedness is absent. Such considerations, based on genetic research, support combining the types, as above, especially when making comparisons.

In the Ekven and Uelen series, incisors with a different degree of expression of the shovel-shaped form occurs at the frequency shown in Table 10. In spite of the very insignificant number of incisors in the series, we can nevertheless consider the results accurate. A similar frequency of shovel-shaped incisors is noted among modern Eskimos (according to Hrdlička, 84% exhibit forms 2 and 3 on mesial incisors). Based on that trait, the Ekven and Uelen series can be considered typically mongoloid.

Table 10. Shovel-Shaped Incisors in the Skull Series from the Ekven and Uelen Cemeteries.

	N	**1 (%)**	**2 (%)**	**3 (%)**	**Sum 2+3 (%)**
			Ekven		
Mesial incisors	19	15.7	57.8	26.3	84.1
Lateral incisors	15	6.7	66.6	26.6	93.2
			Uelen		
Mesial incisors	5	20.0	60.0	20.0	80.0
Lateral incisors	5	20.0	60.0	20.0	80.0

REDUCTION OF LATERAL UPPER INCISOR

In the Ekven series, only one case of reduction of the lateral incisor was noted, and in the Uelen not a single archaic trait can be seen.

CANINES

The canines in both series were large, with rather well-expressed lingual tubercles. When possible, the canines' root system was examined. In only one case (in a Uelen specimen) was a canine with a double root noted (in the upper jaw).

DEGREE OF DIFFERENTIATION OF PREMOLARS

Differentiation of the upper premolars is usually expressed in the separation in the distal section of the crown of an additional tubercle, homologous to the metacone of the molars. This phenomenon is generally rather rarely observed. In the Ekven series, it was encountered in 3.1% of cases on the first premolar and as frequently on the second. In the Uelen series, it was observed once on the first and once on the second premolar, which in relation to the total number of corresponding teeth (N = 20 P^1 and N = 20 P^2) amounts to 5%.

Differentiation of the lower premolars is expressed in an increase of the lingual tubercle, the separation of the latter from the vestibular, and finally in the subdivision of the lingual section of the crown into two or even three tubercles. In addition, the first premolar usually reveals only the beginning stages of differentiation, that is, an increase of the lingual tubercle, without its subdivision. The second premolar is capable of giving a three- and even four-tubercle form. In the series being studied, we determined the percentage of forms with a large lingual tubercle for the first premolar and the percentage of three-tubercle forms for the second premolar. Forms with a developed lingual tubercle were encountered among the first lower premolars in the Ekven series in 16.1% of cases (5 of 31), and in the Uelen series in 26.3% of cases. We noted three-tubercle forms among second lower premolars in the Ekven series in 38.7% of the cases (12 of 31), and in the Uelen series in 21% of the cases (4 of 19). It is interesting that the frequency of three-tubercle forms in P^2—very close to what we observed in the series from the Ekven cemetery—was found by Pedersen for Eskimos (36.2%), whereas our result, for the Uelen series, shows almost exactly the same frequency that K. Murris found for Aleuts (21.4%).

MORPHOLOGY OF THE UPPER MOLARS

Examining the upper molars, one notices the degree of reduction of the distal tubercle, chiefly the hypocone. We determined the degree of reduction of the hypocone based on A. Dallberg's well-known schema, in which with the completely developed hypocone is called type 4, the form with moderately reduced hypocone type 4–, molars that preserved only a rudimentary hypocone type 3+, and finally, teeth lacking any hypocone type 3. Table 11 shows the frequencies we found in the types of upper molars in Ekven and Uelen series.

Table 11. Frequency of Different Degrees of Reduction of the Hypocone in the Upper Molars in the Series from the Ekven and Uelen Cemeteries.

Teeth	**Number**	**4**	**4–**	**3+**	**3**
			Ekven		
M^1	43	60.46	39.54	—	—
M^2	39	5.13	51.28	12.82	30.77
M^3	34	—	2.94	20.59	76.47
			Uelen		
M^1	32	75.0	21.85	3.12	—
M^2	33	—	21.21	39.39	39.39
M^3	24	—	4.17	25.0	70.83

An examination of the table shows the strikingly high frequency of types 3 and 3+ on the distal molars, especially on wisdom teeth. The overall frequency of forms 3 and 3+ for the third upper molar is 95.83% in the Ekven series and 97.06% in the Uelen series. Of the 22 racial groups that we compared, the frequencies of the forms being compared were lower and were encountered only among the Chukchi (85.2%), Pima Indians (80.0%), and Labrador Eskimos (74.7%). In the remaining groups, among which there are representatives of all three large races, these frequencies fall below 65% in the vast majority of cases. The reduction process here results in the unusual combination of large teeth and a very high degree of reduction of the hypocone.

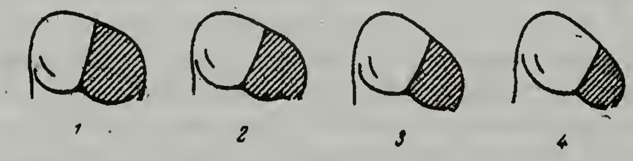

Figure 102. Schema of degree of reduction of the metacone.

The question of the degree of the metacone's reduction is often written about today. However, up to now, no classification based on the degree of reduction of this tubercle has been created, and almost no concrete statistical material based on this trait has been introduced. In this work, we decided to introduce a schema of degree of reduction and to use it to determine the level of reduction in the metacone in the series being studied. In addition, a parallel determination of the degree of reduction of the metacone was undertaken in the Kirghiz and Pamir peoples' series, which was brought in for comparison. The schema of degree of reduction of the metacone is illustrated in Figure 102. As the base of the schema, there is a visual comparison of between the metacone and the more stable paracone.

Type 1. The metacone is equal to the paracone, or exceeds it in dimensions.

Type 2. The metacone is less than the paracone, but comparable to it in dimensions.

Type 3. The metacone is approximately equal in area to half of the paracone.

Type 4. The paracone is more than twice the size of the metacone. A type 5 is also possible, in which a small rudimentary "granule" represents the metacone. In cases in which it is difficult to decide which of the two forms is before us, we set an intermediate amount, for example, "3.5."

Table 12 shows the results, with an average amount of reduction of the metacone being calculated for each tooth. In addition, the "total amount" (the sum of the amount for the three molars divided by 3) is given. The data cited in Table 5 indicate an extremely low level of reduction in the metacone in the Ekven series. In the Uelen series, the metacone is much more reduced. Based on analysis of this trait, we can see the essential difference between the two series. The greatest reduction of the metacone appears in the Pamir people's series, which is also expected, because it is known that southern Europoids have an extremely high degree of reduction of the metacone.

Table 12. Reduction of the Metacone in the Upper Molars in the Series from the Ekven and Uelen Cemeteries in Comparison with Other Groups.

Group	**N**	**M^1**	**N**	**M^2**	**N**	**M^3**	**Total Amount**
Ekven people	43	1.43	39	1.51	34	2.38	1.77
Uelen people	34	1.58	33	2.06	24	2.67	2.10
Kirghiz people	36	1.61	32	2.42	24	3.00	2.34
Pamir people	44	1.91	28	2.89	24	3.33	2.56

We also determined also the frequency of cases of subdivision of the hypocone and metacone in the upper molars.

Subdivision of the hypocone is a rather common occurrence (30%) in modern groups (Ossets, Buryats, Papuans, and Negroes); there is no definite tendency toward intergroup differences. As unusual as it might seem, we did not encounter subdivision of the hypocone in our material but among modern groups only in the Ulcha series. We previously noted a rather low frequency of subdivision of the hypocone in the Chukchi series (M^2-6.2%, M^3-14.2%).

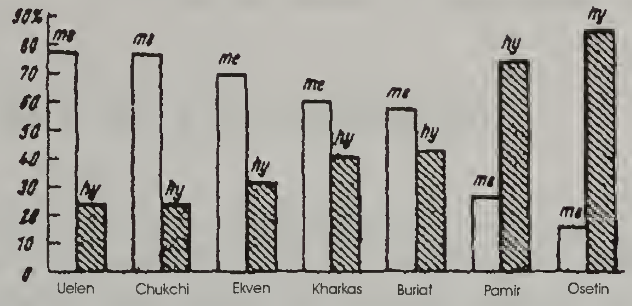

Figure 103. Correlation of sizes of the metacone and hypocone on M^1 in different racial groups (me = metacone; hy = hypocone).

With no cases of subdivision of the hypocone in the Ekven and Uelen series, it is surprising that we should find an uncommonly high incidence of subdivision of the metacone, whereas, in the modern series, we encountered a divided metacone only in isolated cases. In the Ekven series, there was subdivision of the metacone in 10.7% of cases (3 of 28) on the second upper molar, and in 25% of cases on the third molar (7 of 28), with subdivision of the metacone on both distal molars being noted only once. The same was observed in the Uelen series, where the subdivision of the metacone on the second molar occurred in 16.6% of cases (4 of 24), and on the third molar in 20.8% of cases (5 of 24). These data are not comparable to those of any racial groups whose in odontological statistics are known, and evidently attest to more or less long isolation.

The correlation between the metacone's and hypocone's dimensions is represented in the diagram in Figure 103. The height of each bar represents the frequency of cases in which this tubercle exceeds in dimensions the tubercle with which it is being compared. As expected, the Ekven and Uelen series differ in the superiority of the metacone over the hypocone because the strong reduction of the latter indicates an insignificant reduction of the first. The opposite is seen in the southern Europoids (Ossets, Pamir) series, where extremely strong reduction of the metacone occurs with relatively weak reduction of the hypocone. The Chukchi series is very similar to the Uelen series.

The developed Carabelli trait characterizing the first upper molar in the Ekven series is completely absent, whereas in the Uelen series, it is present in 8.6% of cases. Wear makes it difficult to distinguishing the rudimentary stages of the tubercle. However, we tried to determine tubercles' frequency, and found them in 34.5% of the Ekven specimens and 34.7% of those from Uelen. On one of the skulls from the Uelen cemetery, a huge Carabelli trait was noted on the second upper molar, while on the first there was none. The complete absence of a genuine Carabelli trait in the Ekven series recalls the Pedersen's Eskimo series. Based on this author's data, Carabelli traits are entirely absent among the Ekimos of Greenland and Labrador. We observed a very low incidence of the Carabelli trait among the Chukchi (5.8%). It is low among the Aleuts (13.3%, according to K. Murris) and the Ulcha (11.1%, according to our data). All the Mongoloid groups differ in that they rarely have the tubercle: Pecos Indians—8.0%, Birman—8.8%, and Chinese—7.4%. Europoids, by contrast, often exhibit the Carabelli trait (Latgals, based on our data, the rate is 44.2%; white Americans, according to A. Dallberg, it is 41.1%). Thus, the Carabelli trait is found in both the Ekven and Uelen series at the same rate as among the Mongoloids, with the incidence in the Ekven series being particularly close to the rate among the Eskimos. This same tendency is also manifested in the Chukchi series. In this case, the Uelen series' data approach that of non-Arctic Mongoloid groups.

As for other tubercles on the upper molars in our series, only one specimen, a skull from Ekven, had a tubercle there, on the buccal side on M^2.

MORPHOLOGY OF THE LOWER MOLARS

An analysis of the morphology of the lower molars is best begun by ascertaining the number and location of the tubercles, for which M. Hellman worked out a schema of types. It should be remembered that in this schema the lower molars are separated into a Y-series, in which contact between the protoconid and entoconid is absent, and the plus-series, in which the mentioned tubercles are in contact. The symbol of each series is followed by the number of tubercles (Y5, +4, and so on). Many authors who have followed M. Hellman have added to his schema types +6, Y6, and Y3. Table 13 contains data on the frequency of different forms of the lower molars in the Ekven and Uelen series. In both series, as in all Mongoloid groups, the percentage of the four-tubercle forms on the first lower molars is low. The percentage of the Y5 form in the Ekven series (92.4%) approaches that of the corresponding form on M_1 among the Eskimos (94.4%, according to P. Pedersen). The Uelen series has 85.8% of Y5 form on this tooth. The Alaskan Eskimos fall between the specimens from the Ekven and Uelen series, with a rate of 89.6%, according to A. Dallberg. The Ekven series has no six-tubercle forms at all on the first lower molar, in this way resembling the Eskimos. Non-Arctic Mongoloids often have a rather high frequency of six-tubercle forms on this tooth (for example, among the Buryats, the total percentage of forms Y6 and +6 on M_1 is 30.4%). The Uelen series instead resembles the non-Arctic Mongoloid groups (14.2%). On the second lower molars in the Ekven series, the frequency of the +5 form (60%) is exceptionally high. In this regard, the Ekven series is especially close to the Alaskan Eskimo series (in which, according to Dallberg, 63.8% of specimens are affected). In relation to the frequency of form +5 on M_2, these two series stand apart from almost all other groups. The five-tubercle forms on M_2 are also very frequently found in the Negro series, but this is in large part owing to the Y-series (Negroes: Y5—37.4%, Papuans: Y5—25.0%). The percentage of four-tubercle forms on the second lower molar in the Ekven series is extremely low. Such low frequencies are not encountered in any of the other series we used for comparison. Only in the series of the Alaskan Eskimos and among Negroes are relatively close numbers observed. The form Y4 was not found even once in the two series being studied. The Ekven and Uelen series are similar in their extremely low percentage of four-tubercle forms on M_2, but rather sharply different in their correlations with the Y4+ series for five-tubercle forms. In the Uelen series, this trait occurs in a similar percentage of cases as in the rather distinctive Greenland Eskimo series (+5—42.0%, Y5—19.0%, according to P. Pedersen). Incidentally, Greenland and Alaskan Eskimos differ odontologically from each other in some traits, though they undoubtedly comprise a single type. The Uelen series is characterized by a high percentage of six-tubercle forms on M_2 (a total of 24.9%), which brings it close to the intercontinental Mongoloids. The Ekven frequency of six-tubercle forms on this tooth in the Ekven series approaches that of the Alaskan Eskimos (Ekven—10.0%, Alaskan Eskimos—10.4%).

Table 13. Frequency of Different Forms of Lower Molars in the Series from the Ekven and Uelen Cemeteries.

Teeth	N	Y6	+6	Y5	+5	Y4	+4	Y3
Ekven								
M^1	26	—	—	92.4	3.8	3.8	—	—
M^2	30	—	10.0	20.0	60.0	—	10.0	—
M^3	24	4.1	37.5	8.2	45.8	—	—	—
Uelen								
M^1	14	14.2	—	85.8	—	—	—	—
M^2	12	8.3	16.6	24.9	41.6	—	8.3	—
M^3	12	—	41.6	24.9	33.3	—	—	—

Among the third lower molars in both series no four-tubercle forms were noted. On the other hand, six-tubercle forms are encountered frequently—41.6% in both series. Among modern Mongoloid groups, we encountered such a high percentage of six-tubercle forms on M_3 only among the Buryats (42.9%) and Kirghiz (40.3%). In this case both of the examined series are similar with non-Arctic Mongoloids.

Besides the sixth tubercle, the Uelen series is also characterized by a relatively high incidence of additional internal medial tubercles (*tuberculum accessorium mediale internum*). This form was encountered in 7.1% of the cases on the first lower molar and in 16.6% of cases on the third lower molar but was not found on the second lower molar. The Ekven series is distinct in that the tubercle being examined occurred less often. Here, it was not encountered at all on the first lower molar; on the second molar it was noted in 3.3% of cases; and on the wisdom tooth, in 4.1% of cases. It should be noted that in both series the additional internal medial tubercle was part of the entoconid, whereas it is much more often part of the metaconid. This is one of the distinctive traits common to both series being examined.

On the lower molars, a protostylid was encountered in the Ekven and Uelen series. We noted the frequency of this formation based on Dallberg's classification. We combined stages 2 and 3, and also 4 and 5, since they were difficult to distinguish from each other. We saw form 1 (deviation of the lateral furrow) in the Ekven series on the first lower molar in 3.8% of cases, and on M_2 in 10.0%; it was not noted on M_3 at all. In the Uelen series, form 1, by contrast, was encountered only on the wisdom tooth (16.6%). A moderately developed protostylid (forms 2+3) was most common on the wisdom teeth in both series (Ekven—12.3%, Uelen—8.3%). In the Ekven series, it is also noted on M_2 (3.3%), and in the Uelen series, on the first lower molar (7.1%). These forms of protostylid were not found on the first molar in the Ekven series or on the second in the Uelen. A strongly developed protostylid in both series was encountered only on the third molars (Ekven—16.6%, Uelen—8.3%). The total frequency of all forms of protostylid on M_3 in the series from the Ekven cemetery reaches 28.9%, and in the Uelen series 16.6%. It must be said that these frequencies are nevertheless low for Mongoloid groups, where the frequency of the protostylid reaches 60%. In addition, it should be noted that in our series the protostylid was most common on the wisdom teeth, whereas, based on the data of other authors, this tubercle is most often observed on the first lower molar. Divergences owing to the method of observation were excluded in this case. The explanation for this phenomenon can be found by excavating new material.

A very important morphological feature of the crown of the lower molars, from the point of view of the physical anthropologist, is the distal crest of the trigonid—the uninterrupted fold of the enamel that joins the protoconid and the metaconid near the central pit. This structural feature of the lower molars has so far been observed among modern groups almost solely in Mongoloids, where its frequency on the first lower molar usually hovers around 30%. On the second and third lower molars, the distal crest of the trigonid is encountered much more rarely. In our series, the frequency of this form on the lower molars is as shown in Table 14. As we can see, both series reveal a frequency of cases, typical for Mongoloid groups, of the presence of a distal crest of the trigonid, with the crest most commonly on the first lower molars. Unfortunately, we still do not have comparative data for this trait in modern Arctic groups.

Table 14. Frequency of the Distal Crest of the Trigonid on Lower Molars in the Series from the Ekven and Uelen Cemeteries.

	N	n	%	N	n	%	N	n	%
Ekven	36	12	33.3	38	2	5.3	30	1	3.3
Uelen	14	4	28.4	13	1	7.7	12	1	8.3
			M_1			M_2			M_3

N = Total number of observations.
n = The number of teeth with a crest.

Because of the considerable wear on the teeth in our series, we were unfortunately unable to find out how often one more formation occurs—the no-less-important masticatory surface of the lower molars—the so-called geniculate fold of the metaconid, which apparently has a definite connection with the distal crest of the trigonid.

THE INTER-ROOT POCKET OF ENAMEL

A "pocket" of enamel is a shelf of enamel that descends from the enamel-cement boundary of the molar and, when strongly developed, is found between the roots. P. O. Pedersen, having examined this formation, provided a classification in which he designated the forms of the line of the enamel-cement boundary (without an enamel pocket) with the numbers 1, 2, 3—straight, concave toward the cheek, and convex toward the cheek, respectively—while the different degrees of development of the pocket he denoted by the numbers 4, 5, 6 (small triangular projection, thin band of enamel beginning to form between the roots, and long dense enamel strand going far between the roots, respectively). Pedersen, and later authors, noted that the pocket of enamel, especially in the developed forms, is encountered primarily in Mongoloid groups. Among the Eskimos, more than 90% exhibit these forms (forms 5 and 6 in sum). A pocket of enamel is especially common on the second molars.

To avoid overloading this analysis with numerical data, we give here the percentage of pockets of enamel on the molars series in sum for forms 5 and 6 in the Ekven and Uelen series. In this form, these data are much more graphic and more easily compared. Based on the frequency of enamel pockets on molars, the series that we studied was similar to Mongoloid groups. Based on the frequency of pockets on the second molar, both series are very close to the Eskimos. In Europoid and Negroid groups, the frequency of this formation rarely exceeds 30% in its developed forms.

Table 15. The Total Percent of Forms 5 and 6 Pockets of Enamel (after P. Pedersen) on Molars in the Series from the Ekven and Uelen Cemeteries.

		M1	**M2**	**M3**
Ekven	Upper Jaw	47.2	88.8	83.2
	Lower Jaw	47.1	86.5	71.4
Uelen	Upper Jaw	61.0	94.4	75.0
	Lower Jaw	62.2	91.7	66.6

Considering the small number of teeth examined, we nevertheless believe it possible, based on several of the most indicative traits, to draw the following conclusions.

1. Based on the overwhelming majority of odontological traits, the series from the Ekven and Uelen cemeteries may be assigned to the large Mongoloid race or, if proceeding from the odontological classification of humanity, to the large eastern branch. This is indicated by the frequencies of the shovel-shaped form of the incisors, the distal crests of the trigonid, the pockets of enamel, the infrequency of the Carabelli trait, and the correlation of sizes of the metacone and hypocone. The series being examined differ by only one trait (the protostylid) from the majority of Mongoloid groups, being rather distinctive.
2. Based on several features of the structure of the tooth system, the series from the Ekven cemetery (less so than Uelen) reveals a distinct gravitation toward Arctic racial groups, especially Eskimos (and particularly Alaskan Eskimos). This is corroborated by the especially high frequency of cases of hypodontia of third molars, the high frequency of crowding, the combination of macrodontism with a high degree of reduction of the hypocone, the exceptionally high frequency of +5 form in the second lower molar, the high degree of differentiation of the lower molars and premolars, the extremely low frequency of Carabelli traits, the complete lack of the sixth tubercle on the first lower molar (with a high frequency of it on the wisdom tooth), and the relatively small size of the third upper molar.
3. In many traits, both series are very similar to each other. This similarity is manifested in the absolute dimensions of the teeth, the indices of the crowns of the molars, the frequency of the shovel-shaped form of the incisors, the inter-root pockets of enamel, and the distal crest of the trigonid. Based on features common to the whole Mongoloid race, the two series differ very little from each other. In addition, the two series are also greatly similar in some features that are so distinctive as to be almost unique. For example, we see the peculiar combination of many cases of subdivision of the metacone and very few with subdivision of the hypocone, the additional internal medial tubercle that is always a part of the entoconid, the extremely low frequency of four-tubercle forms (especially Y4) on the lower molars, and the exceptionally high indices of the crowns of the first lower molar.

However, several other features convince us that, in spite of the similarity, the two series are two different groups within the framework of a common type. The Uelen series, compared with the Ekven, has a substantially lower frequency of crowding and hypodontia, a much greater degree of reduction of the metacone, a higher frequency of the Carabelli trait, a lower percent of the +5 form on second lower molars, and a smaller degree of differentiation of lower premolars. All or almost all of the enumerated traits form that complex by which Arctic groups are distinguished from other groups of the Mongoloid race. Thus, the series from the Uelen cemetery, compared with that from Ekven, differs by the "softening," the weakening of the Arctic complex, and somewhat deviates toward non-Arctic inner-continental Mongoloids. In addition, this series is in many ways characterized by a mosaic combination of traits that distinguish different Arctic groups gravitating now toward Greenland Eskimos, now toward Alaskan, now toward Aleut, now toward Chukchi.

The Ekven and Uelen series give the impression of related groups having a common origin and existing for some time together in isolation. This isolation ended earlier for the Uelen group, which received an influx of outside racial elements. The question of the origin of the studied groups, especially Uelen, would seem to require further in-depth work drawing on archaeological material.

4. Both groups reveal archaic features in the structure of the tooth system characteristic for the Mesolithic through the Bronze Age: a labiodontal bite, equality of vestibular-lingual diameters of the first and second upper molars, a high degree of differentiation of the lower molars and premolars, superiority of the first lower premolar over the second by the meso-distal diameter of the crown, the small degree of reduction of the lateral incisor, and elevated indices of the crowns of the distal upper molars.
5. The process of reduction of the tooth system occurred in the series in a few different forms simultaneously: crowding, loss of tubercles, and hypodontia. The reduction of the absolute dimensions of teeth played a subordinate role. It is interesting that in each jaw all forms of reduction are rarely observed simultaneously. For example, in the Ekven series, on the upper jaw hypodontia is rare, but the reduction of the tubercles is very pronounced, and crowding is observed. In the lower jaw, by contrast, crowding is rare and a high differentiation of the tubercles is preserved, but then the frequency of hypodontia is substantially higher.

Pathological Changes In Ekven Skeletal Materials

G. B. Lebedinskaya

Before we start describing the pathological changes in the Ekven cemetery skeletons, I will talk about the appropriate goals of this kind of research.

Despite the fact that the interest in paleopathology has increased considerably, as reflected in the number of articles in both domestic and foreign journals, there still is not enough research in this area.

Thanks to the years of work of D. G. Rokhlin (1965), which established the foundation for research in paleopathology in our country, we have information about diseases that existed long ago and about how "old" those diseases are. But we still do not know how common they were, what the morbidity rate was among different sections of the population, or how those diseases evolved. This information by itself and when compared with data from paleoanthropology, archaeology, and paleogeography could support a new and interesting area of medicine, which could provide additional information on the etiology and pathogenesis of a number of diseases.

Information on the morbidity rate, in connection with the average life expectancy of various population groups, would be of great interest to both archaeologists and paleoanthropologists. Also, the frequency and types of traumas would reflect living conditions and relations within each group.

Using the paleo-material to study anomalies and variations in diseases' development is also important. In most cases, our domestic literature does not ask these questions, although such information is important to explain the problems of comparative morphology and group characterization (Bunak 1925).

To perform the research in these areas, one must first get the complete osteological material from each cemetery to be able to determine the average life span and morbidity rates. Only when we obtain considerable data about each separate group will can we make broader generalizations.

Current museum collections can provide only additional material because they are incomplete and not integrated.

Determining age is the second important problem in this type of research. All the methods used today (ascertaining the degree of tooth wear, the sequence of suture absorption, and the changes in skeletal bones) allow us to determine a skeleton's age within five years, or in the case of adults, to within 10 years. Determining age by analyzing the inner structure of long bones also presents difficulties. The existing methods of determining age by examining changes in the spongy-tissue structure of the bone were created to date fresh skeletons and are often not useful for dating paleo-materials because broadening of the marrow cavity can result from the destruction of the trabeculas of the spongy bone tissue, depending on the burial's conditions.

We determined the ages of the skeletons from Ekven cemetery together with T. S. Surnina, by considering the degree of skull suture absorption, tooth wear, and changes in the long bones (Hansen 1953–1954). The resultant age differed considerably from method to method. In some cases, the skull's age and that of the long bones of the skeleton differed greatly.

As far as the completeness of the osteological material is concerned, there are many opportunities for research at the Ekven cemetery. Unfortunately, only parts of skeletons in other cemeteries are being removed. This practice is not always the result of transportation difficulties or poor preservation of the bones. In most cases, the problem is that excavators underestimate the importance of obtaining complete skeletal material from each cemetery.

Not many of the skeletons examined were from the Uelen cemetery, which is located near Ekven. Therefore, we cannot compare these two cemeteries in terms of pathology.

More than 100 graves were uncovered in the Ekven cemetery between 1961 and 1963. Most of them belong to the Old Bering Sea culture. Graves 97, 97b, 97c, and the double Burial 99–100 (containing the skeleton of a 30–40-year-old man and the skeleton of a 50–60-year-old woman) belong to the Punuk culture.

The first thing to draw our attention to the Ekven cemetery's skeletons is the numerous and usually symmetrical changes in the epiphyses of the bones. These changes are manifested in the growth of bone tissue around the joint. The joint's heads are deformed, and considerable bone growth that overhangs the necks of the bones like hats is found around them. In a number of cases, the surface of the joint heads is ground and polished. The diaphysis of the bones was unchanged, and no cases of ankylosis (immovable, knitted joints) were found.

The "mushroom" growths on the joint surfaces are clearly seen in X-rays. The bordering bone plates are thickened and pressed into the spongy tissue of the epiphysis. The spongy tissue, in most cases, looks "wide-looping," or parotic.

The same skeletons usually have some deformation of the backbone: lessening of the vertebral height, the edge "osteophytes."

Thus, the Ekven skeletons display typical features of deforming osteoarthritis and spondylitis.

Deforming osteoarthritis is a chronic degenerative disease of the joints. The joints' hyaline cartilage is more vulnerable to the degenerating changes than is the rest of the tissue because of the peculiarities of its construction and blood supply. Various factors (small traumas, overwork, some endocrinic and other diseases) affect the blood supply to the joint cartilage.

Compromised blood supply causes fatal degenerative changes in the cartilage. The cartilage gradually loses its elasticity, is no longer a buffer for the joint, and is eventually destroyed. But because the process is gradual, the joint pain increases only gradually, and the damaged joint continues to function for some time. All the workload rests on the bone, which tries to resist the condition. Bordering bone plates become sclerotic (firmer) and press against the spongy tissue of the epiphysis. Bone growths (osteophytes) form on the edges of the joint surface and destroy the conformity of the joint parts.

The process is the same in the joints of the elderly. But the aging of the joints is an even more gradual process that takes many years. Sometimes, even in extreme old age, joint changes are not very significant (Klioner 1962).

The fact that the joint changes were distinct in the Ekven skeletons permits us to assume that we are dealing not with changes due to old age but to those caused by pathologic degenerating osteoarthritis. No changes are seen in the skeletons of children and youths, but we must note that among the adult skeletons with apparent osteoarthritis and spondylitis there are some relatively young individuals (25–30 years old). This fact proves that the process of joint cartilage destruction started early—in fact, as early as adolescence. We know this because, as we have already noted, the observable changes in the joints begin much later than the disease itself.

We examined 84 skeletons from Ekven cemetery (43 male and 41 female).

In Table 16, we marked mild osteoarthritis and spondylitis with one cross, moderate growths of bone tissue around the joint with two crosses, and severe hypertrophic osteoarthritis and spondylitis with three crosses. A dash means that the bones were missing. If there is no cross, the bone had no sign of disease.

If we exclude from the table all the skeletons of individuals aged 50–60 years with insignificant age-related changes to the bones (15, 40a, 50, 72, 73, 76, 101), we can state that as many as 22.6% of the Ekven population suffered from deforming osteoarthritis. The morbidity rate among men was 25.6%; among women, 19.5%.

We can imagine the progression of the disease: the first stage would be characterized by periodic aches and grinding in the joints when one moved. Physical exertion and changes in the weather would cause a sharp increase in pain, which would be followed by a decreased ability to work. In very serious cases, the individual would feel acute and permanent pain and grinding in the joints. As the disease progresses, there is a decrease in joint flexibility, which eventually results in complete disability.

Of the Ekven skeletons, 9.5% had a very serious form of osteoarthritis and spondylitis. These individuals were seriously disabled and could not have taken part in sea-mammal hunting or even normal household tasks. Meanwhile, many of these individuals lived to a very old age.

So what caused their disease?

Hard living conditions and sea-mammal hunting that involved all the members of the group (even adolescents) could cause a severe overwork. In immature individuals, too great a workload could cause degenerative changes in the joint cartilage. On the other hand, the high incidence of morbidity, the relatively young age of affected individuals, and the fact that elbow and wrist joints were often affected, along with the X-ray data, lead us to believe the cause to be Kashin-Beck disease.

Kashin-Beck disease is endemic to eastern Zabaikal’e today. There have been individual cases in the Leningrad, Pskov, and Kiev regions. The disease is also seen in Japan, Sweden, and the Netherlands. D. G. Rokhlin found typical features of Kashin-Beck disease in the bones from excavations G. P. Sosnovskii made in the Selenga River region, where he found skeletons that dated from the Neolithic and Bronze ages up to the seventh to tenth centuries A.D. Based on this data, Rokhlin suggested there was a time when the endemic area of the disease was much larger than it is now. A sixteenth-century grave in Kazakhstan, 3,000 kilometers from the modern endemic center, contained a skeleton with evidence of Kashin-Beck disease. The changes Rokhlin, A. E. Rubasheva, and F. P. Sergievskii described coincided with the changes seen in the Ekven skeletons. It is interesting to note that in both studies (by the mentioned group and at the Ekven cemetery) skeletons having very insignificant and nonsystematic changes were found (Rokhlin et al. 1934).

A. I. Kazantsev studied several cases of Kashin-Beck disease in sixteenth- and seventeenth-century skeletons from the modern endemic area (Kazantsev 1954). The etiology and pathogenesis of Kashin-Beck disease are still not very clear. Japanese authors (Hotta et al. 1939) think that Kashin-Beck disease is connected with the opening up of new territories where people have to use well water that is rich in iron, which causes distinctive changes in the bones of the young. Recently, a new toxinogenic theory of the disease has been proposed (Rubinshtein and Razumov 1949). The theory states that a fungus that has contaminated cereal grains being used as food causes changes in the joints. However, experiments have not proven this hypothesis.

According to A. I. Rusakov (1959), Kashin-Beck disease should be viewed as a particular dystrophy of the cartilaginous tissue, which appears under the influence of certain substances or elements entering the organism and preventing the right course of chondrogenesis. As a result, a weakened cartilaginous structure that cannot withstand heavy workloads forms.

Table 16. Osteoarthritis and Spondylitis in Skeletons from the Ekven Cemetery.

Male Skeletons

No.	35		41		53		54		58		62	
Age	60		50–60		25–35		30–40		60		45–55	
Joint	r	l	r	l	r	l	r	l	r	l	r	l
Humeral	+	+							+	+		
Elbow	+++	+++	++	++	+	+	++		++	++		
Wrist	+	+	+	+								+
Hip												+++
Knee	+++	+++										
Ankle												

Vertebra

Neck		—	—		++	+
Thorax	++	—	—		++	
Lumbar	++	—	—		++	
Sacrum	+	++	—		++	

Female Skeletons

No.	15		26		27a		29		33	
Age	45–55		50–60		45–55		45–55		30–40	
Joint	r	l	r	l	r	l	r	l	r	l
Humeral	+	+			+++	+++	++	++	+	+
Elbow	+	+			+++	—			+	+
Wrist			++		+	—	++		+++	+++
Hip	+	+							+	+
Knee	+	+			+++	+++	++	++	+++	+++
Ankle									++	++

Vertebra

Neck	—	—	—	—	—
Thorax	—	—	—	—	—
Lumbar	—	—	—	—	—
Sacrum	—	—	—	—	—

63		77		92b		97c		100		101		75		76	
25–35		45–55		40–50		50–60		30–40		50–60		35–45		60	
r	l	r	l	r	l	r	l	r	l	r	l	r	l	r	l
								+	+					+	+
			+++	+++	+++		—	+++	+++						+
		+++	+++	+++	+++		—	+	+			+++			
								+	+	+	+	—			
									—			—		++	++
									—			—			

			—	—	—		
+	+		—	—	—	—	+
	++		—	—	—	—	+++
	++	+	—	—	—		+

40a		44a		47		50		70		72		73	
50–60		30–40		25–35		40–50		60		45–55		50–60	
r	l	r	l	r	l	r	l	r	l	r	l	r	l
						+	+	++	++	+	+		
		+	+	++				++	+++				
		+	+			+		+++	+++	+	+		
								+	+				
+	+							+++	+++			++	+
								+	+				

—	—	—	—	+		
—	—	—	—	+++	+	
—	—	—	—	+++	+	+
—	+	—	+	—		

According to many researchers, Kashin-Beck disease starts as early as age four or five, when a child becomes especially active, or at 10 to 12, when a child starts participating in hard physical labor.

According to recent studies (Tikhonov 1961), children and teenagers with Kashin-Beck disease did not have a generalized deforming arthritis, whereas afflicted adults and the elderly did.

According to Rusakov, transverse "scratches" on the X-rays of people with Kashin-Beck disease and transverse "scratches" in cases of hypothyroidism developing in childhood are identical and attest to the fact that growth is occasionally arrested in such patients. During the arrests, a "locking" cartilage plate formed in the growth cartilage. In the Ekven cemetery, only two skeletons (27a and 33) were found with transverse "scratches."

Rokhlin and V. A. Tikhonov also noted that the primary changes Kashin-Beck disease caused are in the distal or central phalanges of the hand and eventually result in shortened fingers. Unfortunately, we did not have an opportunity to observe this change in the skeletal remains from the Ekven cemetery because most of the hand bones were missing. (This once again demonstrates the importance of removing all the skeletal material from a cemetery during an excavation.)

Along with providing the above information, we should say that S. N. Levenson's (1954) data concerning changes in dentition associated with Kashin-Beck disease do not coincide with the changes found on the teeth from the Ekven cemetery (based on T. S. Surnina's materials).

The Uelen cemetery is also of interest for research purposes, but as we have already stated, there were not many skeletons from that cemetery, and those found were not complete. However, in skeleton 5 we managed to find significant changes in the forearm that attested to a severe degenerative arthritis in the elbow and wrist joints.

The degenerative arthritic conditions described above were not the only pathological changes found in the skeletal remains from the Ekven cemetery.

The left shoulder, right forearm, and left tibia of skeleton 44b were stricken with severe osteomyelitic changes. Extreme destructive changes were seen on the shoulder and tibia. There was osteoarthritis of the knee joint considered to be secondary to a chronic leg injury.

We should also note the changes observed in skeletons 40a and 75 (both female). There were symmetrical, uneven thickenings of the diaphyses, which had pores from blood vessels. The changes should be viewed as ossific periosteosis (hypertrophic pulmonary osteoarthropathy) or, as it is also known, Marie-Bamberger disease. It is commonly found in cases of chronic pulmonary disease. This condition is also commonly seen in heart and pleural disease, and less frequently in liver and kidney disease. The disease is a peculiar reactive condition of the periosteum, which becomes significantly thicker, eventually decalcifies, and then reossifies.

Very few broken bones or evidence of other traumas were seen on the Ekven skeletons. We did note a case in which a skeleton (103) had an injury to the external plate of the left frontal bone. The size of the injury was 10 x 4 millimeters, and the edges were thickened.

Healed breaks were found on the ulna of skeleton 11 and the radius of skeleton 7 from the Uelen cemetery. We hypothesize that the fractures were immobilized with special splints made from animal bones, which would be better than wooden splints. From this point, we should probably examine the bone items, the assignment of which has not yet been determined.

The hip joint on skeleton 58 from the Ekven cemetery had a deformation in which the joint surface was flattened and the head of the femur was deformed, likely the result of a congenital defect.

In addition to everything so far described, we also found a number of peculiarities in some of the skeletal remains from the Ekven cemetery. For one thing, skeleton 78 had complete fusion of the second and third cervical vertebrae.

We observed two cases of bilateral spondylitis. Skeleton 66 had an incomplete fusion (diastema?) of the vertebral arches of the fourth and fifth lumbar (?) vertebrae. Skeleton 89 had spondylitis only of the fifth lumbar (?) vertebra.

Two individuals (13 and 46a) had bilateral sacralization of the fifth lumbar vertebra.

Finally, skeletons 44b and 66 had abnormalities of the coccygeal vertebrae.

The State of the Tooth-Jaw System in the Early Chukotka Population

(Paleoanthropological Materials from the Uelen and Ekven Cemeteries)

By T. S. Surnina

Among the various diseases of the tooth and jaw system of early and modern humans the most widespread are caries and periodontitis. While caries strike the crown of the tooth, with periodontitis pathological changes occur in its root system. In the study of diseases of the teeth two indices accepted in stomatology, are used here.

1. The index of the distribution of caries (the percent of persons with carious teeth within the total number of those examined, independent of the number of infected teeth).
2. The index of intensity of infection (the average number of teeth infected with caries on one individual).

It seems expedient to introduce these indices into the practice of anthropological investigations dedicated to the study of the paleopathology of teeth. Unfortunately, in anthropological works dealing with the description of caries, the percent of infected teeth is most often cited but the number of the series is not indicated. In several cases it is difficult to understand what index the author uses. In addition, the application of these indices permits tracing the "geography" of caries and temporal development of the disease.

A recent large-scale investigation conducted by Soviet and foreign stomatologists has indicated that more than 90% of the world's population suffers from caries, and, in addition, caries strikes baby teeth and permanent teeth to the same extent. The percentage of students with caries in Azerbaijdzhan is 83.4—95.1% (Baziyan et al. 1964); in Uzbekistan is 82.3—96.5% (Kargin et al. 1965); and in the Carpathian area is 89.3—93.5% (Dmitrochenko 1964).

In the Leningrad District, caries was noted among 91.1% of the adult population, and there are an average of 6.5 carious teeth per person (Arshanskii 1964). In the Amur District, among persons more than 50 years of age, 100% of people have caries, and the disease is much advanced, with an average of 28 carious teeth in each person examined (Morozova and Voronok 1962).

The teeth most frequently affected with caries are the first molars, then the second molars; the canines have the lowest occurrence of caries.

Scientists ever more urgently express the need for a detailed study of that part of the population that shows resistance to caries. In this regard, the study of the tooth-jaw system of fossil humans is of definite interest.

We know that caries existed in deep antiquity. Teeth affected with caries have been found among the earliest hominids (e.g., at Broken Hill). However, as A. V. Vallua (1957), I. G. Lukomskii (1948), and D. G. Rokhlin (1965) show, even among Mesolithic people, caries is an exceptionally rare disease. The accumulation of paleoanthropological materials now permits us, to a certain degree, to trace the distribution of caries chronologically and regionally. If, for the countries of Western Europe, the caries-infected in the Mesolithic amounted to 3.8%, by the Neolithic it had reached 5%, while in the Ukraine, caries was practically absent, not appearing until the beginning of our era. Caries was also absent in Chukotka in earlier times.

In the skulls from the Uelen and Ekven cemeteries, not a single tooth with caries was found. In this regard, the early population of Chukotka is extraordinary. However, the study of the skulls of Paleo-Eskimos showed an imperfect tooth-jaw system. Among 163 skulls, 95 (58.2%) had lost teeth. Thus, in the skulls from the Ekven cemetery, 652 teeth had fallen out during those people's lives, which amounts to an average of 6.5 teeth per jaw examined. Such an index of tooth infection is very significant, even for modern humans.

The bad state of the teeth and jaws is explained by alveolar pyorrhea, which was widespread here. Alveolar pyorrhea, or periodontitis, is a disease of the teeth's supporting structure that is characterized by atrophy of the alveolar process, and resorption of the dental socket, as a result of which the tooth's root is laid bare, and the teeth become unstable, loosen, and fall out. All these symptoms can be distinctly traced visually and by X-ray in skulls from the early Chukotka cemeteries.

A total of 163 skulls were examined, of which 82 were men's and 81 women's. By our examination, they showed that almost 80% of the population suffered from periodontitis. The illness affected men and women equally, and progressed with age. The beginning (first) stage of periodontitis, characterized by uniform horizontal atrophy and resorption of the inter-alveolar partition, was noted among 38% of the population aged 20 to 25 years. More than one-third of the length of the roots of teeth are bared in this stage, as can easily be seen in X-rays. The developed stage was diagnosed in 31.9% of the 35- to 50-year-old population. Horizontal atrophy at this stage, is always combined with vertical atrophy of the alveolar bone. The roots of teeth are bared over two-thirds or more of their length, the periodontal aperture is widened, and there is formation of osseous pockets, which resulted in displacement and loss of individual teeth or groups of teeth. The complete loss of teeth occurred in 9.8% of all cases, with higher statistics for those over 60.

Pathological processes had most often developed in both jaws, and were first predominant in the molar group, then in the incisors, whereas the premolars suffered much more rarely. The canines were affected only when the process, embraced the whole row of teeth.

Our materials indicate two forms of periodontitis: dystrophic (dry) and inflammatory dystrophic (abscessed), according to I. O. Novik's (1964) classification. As is well known, periodontitis is not accompanied by regeneration of the resorbed bone. The pathological process that emerges is irreversible, and regeneration of the bone tissue of the alveolus does not occur. It is interesting to note that dystrophic processes with periodontitis are limited to the alveolar bone region and are not developed in other skeletal bones.

Tartar deposits are usually considered a symptom of periodontitis. Tartar is usually well preserved, especially beneath the gums, where it is more compact. In the works of P. Boev and D. Maslinkov (1965), which were dedicated to the study of the paleopathology of Bulgaria's early population, there is much tartar on teeth infected with periodontitis. In our series of skulls, no tartar formation was found.

THE ETIOLOGY OF PERIODONTITIS

Despite the huge number of works dedicated to periodontitis, the nature, etiology, and pathogenesis of this disease remain unresolved. That there are more than 350 theories, concepts, and working hypotheses testifies to the complete lack of clarity on this question. Most authors give several reasons for why the disease developed, holding that local and constitutional factors played a role. Several researchers see the chief cause in a disturbance of the cortical-visceral system and in vascular damage to the alveolar process (Evdokimov 1962; Ginsburg 1954). The group of vitamins A, B, C, D, P, and E certainly influences the state of the periodontal tissue (Begel'man et al. 1958; Smotrov 1946). A connection between periodontitis and gastrointestinal (especially liver) diseases was repeatedly noted (Neimark 1939; Volynskii 1960). Data on the endocrine glands' influence in the development of periodontitis are contradictory. Periodontitis, in the developed stage, is usually due to some kind of common illness and is a toxic center that in turn causes disease in various organs and systems. I. O. Novik (1964) notes that periodontitis should be viewed as the manifestation of a general perturbation of the whole organism whole or some of its systems, with local factors only promoting the disease's development.

Many authors consider periodontitis, like caries, to have been around for a very long time. P. Boev and D. Maslinkov (1965) noted atrophy of the alveolar process among Paleolithic humans. Based on their data, in the Eneolithic, the percentage of skulls with signs of periodontitis, is much greater. According to literary sources, the Egyptians had information on this disease more than 4,000 years ago and tried to treat it by administering plant-derived medicines and by mechanically supporting the loose teeth, using wire and rings. G. D. Derums (1964), who studied the paleopathology of teeth from the Baltic region, notes a high percentage of periodontitis in skulls from the Middle Ages. D. G. Rokhlin (1965) noted symptoms of periodontitis in skulls dating to later times.

One gets the impression that widespread periodontitis as appeared somewhat later than caries. The literature indicates that periodontitis and caries are incompatible, or, at least, that periodontitis is observed in people among whom caries are very rarely encountered. Our materials corroborate this observation.

TOOTH WEAR

A great amount of tooth wear was noted, on average equaling a mark of 2.4.

There is an equal amount of tooth wear on the skulls of men as on those of women. The greatest wear is on the incisors' cutting edge and the molars' chewing surface. In several cases, the incisors are substantially more worn than are the molars, which results in the formation of an open occlusion. The horizontal abrasion is predominant on the incisors, whereas on the molars, the wear is pronounced in the vestibular-lingual direction. In spite of severe tooth wear, the pulp chamber is not open. There was evidently a very intensive process of formation of secondary, substitute dentine. On very worn teeth, the tooth chamber was obliterated.

As is well known, the degree of tooth wear is one way of determining age. However, scales measuring tooth wear for modern humans often do not help determine age in the paleo-material. Thus, in several cases, tooth wear on our skulls exceeded the actual morphological age, which was based on analyses of the skull and skeletal bones. We also note such divergences when examining Eneolithic skulls from the Aleksandriiskii cemetery (Surnina 1963). Therefore we can see that the rate and degree of tooth abrasion in the early population differed from the rate and degree of abrasion modern people exhibit. Teeth were abraded at younger ages and more severely. Considerable tooth wear is especially connected with eating because early humans ate coarse, rough food that required substantial chewing, which naturally affected the state of the teeth's hard tissues. A second important factor in tooth abrasion is occlusion. One must remember that with the direct occlusion that prevails in the Uelen and Ekven skulls, just as in the Mesolithic and Neolithic skulls, tooth abrasion occurs more quickly. Severe wear, according to several authors, contributes to teeth's resistance to caries. However, such tooth wear does not occur with periodontitis.

Table 17. Tooth Wear.

Value	**Male Skulls**						
	Uelen	**Ekven**	**Uelen-Ekven**				
			18–25 yrs	**25–35 yrs**	**35–55 yrs**	**65 & older**	**All**
0	0	0	0	0	0	0	0
1	3	6	4	5	0	0	9
2	8	18	2	10	12	2	26
3	11	15	0	4	12	10	26
4	4	12	0	0	8	6	16

Value	**Female Skulls**						
	Uelen	**Ekven**	**Uelen-Ekven**				
			18–25 yrs	**25–35 yrs**	**35–55 yrs**	**65 & older**	**All**
0	4	0	4	0	0	0	4
1	9	14	16	7	0	0	23
2	7	11	3	8	7	0	18
3	16	2	0	2	7	9	18
4	2	5	0	0	3	4	7

In any text on stomatology, one can find indications that pyorrhetic teeth are not exposed to abrasion, since they become loose and cannot exert pressure when one chews. In fact, coarse, rough food creates an increased load on the tooth rows and requires a reciprocal reaction from the tooth's supporting apparatus. The efficiency of the teeth especially relies on their stability in the alveolus. Under normal conditions, the alveolus wall compactly embraces the tooth's root up to its anatomical neck. During chewing, the crown's load is counterbalanced by the deep-seated root. For functioning, the anatomical length of the root is not as important as the length of that part of the root that sinks into the alveolus, that is, the inner-alveolar part, the clinical root. Correspondingly, the tooth's extra-alveolar part, or its clinical crown, differs from the anatomical part by the fact that, with atrophying processes in the tissues, the clinical crown is lengthened at the expense of the clinical root and consists of part of the anatomical root and the whole anatomical crown. In these cases, the clinical root is smaller than the anatomical root. The correlation of the extra-alveolar part of the tooth to the inner-alveolar part serves as the clinical characteristic of the tooth and provides an idea of its stability and efficiency. Normally, there is a 2:1 correlation (Betel'man and Bynin 1947; Kurlyandskii 1962). With a change in this correlation—toward lengthening of the extra-alveolar part of the tooth—the static-dynamic conditions of the tooth sharply decreases, and the teeth become unstable and gradually loosen. However, as Novik notes, "With a comparatively shallow pathological socket, the tooth can have a short root, and with this, the tooth is very movable; whereas by contrast, with a deep socket, the part of the root covered by the alveolus can be rather long; therefore, the tooth is still rather stable." It follows from this that the absolute length of the root plays an important role in estimating of the teeth's stability in the jaw, since teeth with long roots—other conditions being equal—are more likely stable. One should recall that the early Eskimos, like most Mongoloids, have short teeth roots. The tooth sits shallowly in the jaw. The index of tooth stability is equal on average to 1:1.13 for the first molar, 1:1.34 for the second molar, and 1:1.47 for the third molar (only jaws without signs of periodontitis were measured). For a comparison, analogous correlations on Neolithic jaws from the Dnepr region are cited: M_1 = 1:2.34; M_2 = 1:2.46; M_3 = 1:2.76.

Therefore, even small disorders in a tooth's root that develop in a similar morphological substrate especially compromise the Paleo-Eskimos' tooth-jaw system. Changes in the physiological equilibrium result in a restructuring of the tooth-jaw system and in the use of the organism's reserve energy. An organ's ability to adapt to its function often compensates for its morphological defects. It is very probable that in our series of skulls, the lower-jaw ridge, which is noted in 67% of cases, serves as a compensatory formation. A lower-jaw ridge occurred as often among men as among women, though the ridge tended to be more developed in men. In the series of skulls being studied, the *torus mandibularis* is noted only in adult jaws. Debets found a positive correlation between this feature and age.

As a rule, the *torus mandibularis* is symmetrical on both sides. It is interesting to note that, in several cases, there was unilateral resorption of the exastoses, brought on by tooth loss, whereas, on the working side of the jaw, the lower-jaw ridge is preserved. This fact confirms our supposition that the *torus mandibularis* is as an adaptive feature to stabilize the teeth during chewing.

In the series of skulls studied, except for periodontitis, we do not see many pathological features and tooth anomalies. In three cases, odontogenic osteomyolites were noted in the realm of the molars in the lower jaw. In the upper jaws, there were retained canines in two cases.

Table 18. Distribution of the *Torus Mandibularis* (after G. F. Debets).

Value	**Male Skulls**					
	Uelen	**Ekven**	**Uelen-Ekven**			
			Ad.	**Mat.**	**Sen.**	**All**
0	8	14	6	10	6	22
1	10	25	9	19	7	35
2	7	11	2	9	7	18
3	2	3	1	2	2	5

Value	**Female Skulls**					
	Uelen	**Ekven**	**Uelen-Ekven**			
			Ad.	**Mat.**	**Sen.**	**All**
0	7	20	16	9	2	27
1	14	17	13	10	8	31
2	3	4	2	3	2	7
3	0	4	0	3	1	4

Table 19. Distribution of the *Torus Palatinus* (after G. F. Debets).

Value	**Male Skulls**					
	Uelen	**Ekven**	**Uelen-Ekven**			
			Ad.	**Mat.**	**Sen.**	**All**
0	12	14	6	10	10	26
1	8	20	8	15	5	28
2	4	12	3	7	6	16
3	3	5	2	5	1	8

Value	**Female Skulls**					
	Uelen	**Ekven**	**Uelen-Ekven**			
			Ad.	**Mat.**	**Sen.**	**All**
0	10	13	11	8	4	23
1	10	19	19	8	6	29
2	7	12	9	6	4	19
3	0	5	0	3	2	5

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(Abbreviations can be found at the end of the References)

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ABBREVIATIONS

AN—Akademiya nauk (Academy of Sciences)

Bd.—Band (volume)

Ch.—chast' (part)

IE—Institut etnografii (Institute of Ethnography)

KSIE—*Kratkie soobshcheniya instituta etnografii* (Brief Reports of the Institute of Ethnography)

LGU—Leningradskii gosudarstvennyi universitet (Leningrad State University)

Sb.—sbornik (collection)

SE—*Sovetskaya etnografiya* (Soviet Ethnography)

SSSR—Soyuz Sovetskikh Sotsialisticheskikh Respublik (Union of Soviet Socialist Republics—USSR)

T.—tom (volume)

VGO—Vsesoyuznoe geograficheskoe obshchestvo (All-Union Geographic Society)

Vyp.—vypis' (extract).

QUADRANT ALPHABET

The excavators often use letters in the Cyrillic alphabet as designators. Since it has more letters than the Roman letters had to be added. Below are the correspondences. (For those who may read *Problemy etnicheskoi istorii Beringomor'ya* by Arutiunov and Sergeev, be alerted that this alphabetical correspondence is slightly different).

А = A

Б = B

В = C

Г = D

Д = E

Е = F

Ж = G

З = H

И = I

К = J

Л = K

М = L

Н = M

О = N

П = O

Р = P

У = Q

Ф = R

Х = S

Ц = T

Ч = U

Ш = V

Щ = W

Э = X

Ю = Y

Я = Z